AGRICULTURAL RESEARCH INSTITUTE

PUSA

TRANSACTIONS

DEPARTMENT OF AGRICULTURE

STATE OF ILLINOIS,

WITH REPORTS FROM

COUNTY AGRICULTURAL BOARDS,

FOR THE YEAR 1879.

EDITED BY

S. D. FISHER, SECRETARY.

VOL XVI, OLD SERIES VOL VIII, NEW SERIES.

SPRINGFIELD:
WEBER & CO., STATE PRINTERS,
1880.

LETTER OF TRANSMITTAL.

To his Excellency, SHELBY M. CULLOM, *Governor of Illinois;*

SIR:—I have the honor to transmit herewith the report of the transactions of the State Board of Agriculture, also sundry papers relating to agriculture for the year 1878.

Very respectfully,

S. D. FISHER, *Secretary*

SPRINGFIELD, May, 1879.

TABLE OF CONTENTS.

	PAGE.
Agricultural Union, second annual meeting	383
Agricultural Statistics	328
Agricultural Statistics for 1877, returned by assessors	405
Annual report—Fat Stock Show	64
Annual meeting, Illinois Agricultural Union	383
Breeding of animals exhibited	72
Canada thistles—reports from commissioners of	381
Convention of delegates	5
Crop correspondents, Post office address of	330
Crop prospects	309
Crops of 1878	323
Crop statement by counties—Average yield for 1878	356
Fat Stock Show, reports of awarding committees	94
Fat Stock Show, Premiums awarded	102
Fat Stock Show, reports of Superintendents	182
Illinois Agricultural Fairs 1878—Table of statistics	222
Illinois State Dairymans Association	259
Illinois Swine Breeders Association	300
Illinois Wool Growers Association, 1877	287
Illinois Wool Growers Association, 1878	296
Incidents and Accidents on the farm	400
List of awards State Fair, 1878	8
Meteorological reports for 1878	334
Meetings of the Board during Fat Stock Show	61
Mineral resources of Illinois	388
Railroad arrangements State Fair, 1878	148
Report of auditing committee	124
Report of committee on crop statistics	149, 308
Reports from county Agricultural Boards	191
Secretary's report	432
State Fair and Fat Stock Show—financial exhibit	221
Transactions State Board of Agriculture	1
Treasurer's report	184
Winter meeting, 1879	106

DEPARTMENT OF AGRICULTURE.

MEMBERS OF THE STATE BOARD FOR 1877–8

PRESIDENT.... D. B. GILLHAM ..... Alton.
EX-PRESIDENT ..... JOHN P REYNOLDS ..... Chicago.
SECRETARY..... S. D. FISHER ..... Springfield.
TREASURER ..... JOHN W. BUNN ..... Springfield.

VICE-PRESIDENTS.

1st Dist	Lewis Ellsworth	Naperville.	11th Dist—David E. Beaty	Jerseyville.
2d "	H. D Emery	Chicago.	12th " James W Judy	Tallula.
3d "	Jonathan Periam	Chicago.	13th " Wm. M Smith	Lexington.
4th "	Geo. S Haskell	Rockford	14th " James R Scott	Champaign.
5th "	J L Moore	Polo	15th " E. H Bishop	Effingham.
6th "	Samuel Dysart	Franklin Grove	16th " B Pullen	Centralia.
7th "	Charles Snoad	Joliet	17th " M. T. Stookey	Belleville.
8th "	Emory Cobb	Kankakee.	18th " James M Washburn	Carterville.
9th "	D W Vittum, Jr	Canton	19th " John Landrigan	Albion.
10th "	Samuel Douglas	Monmouth		

LIST OF COUNTIES

COMPRISING CONGRESSIONAL DISTRICTS IN ILLINOIS.

FIRST DISTRICT – The First, Second, Third, Fourth, Fifth, Sixth and Seventh wards of the City of Chicago, the Towns of Hyde Park, Lake, Lyons, Riverside, Lemont, Palos, Worth, Calumet, Orland, Bremen, Thornton, Rich and Bloom, in Cook county, and the county of DuPage

SECOND DISTRICT The Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth and Fifteenth wards of the City of Chicago.

THIRD DISTRICT – Sixteenth, Seventeenth, Eighteenth, Nineteenth and Twentieth wards of the City of Chicago, the Towns of Cicero, Proviso, Jefferson, Leyden, Lake View, Evanston, Niles, Maine, Elk Grove, Schaumburg, Hanover, Barrington, Palatine, Wheeling, Northfield and New Trier, in the county of Cook, and the county of Lake

FOURTH DISTRICT Kane, DeKalb, McHenry, Boone and Winnebago.

FIFTH DISTRICT - Stephenson, Jo Davies, Carroll, Whiteside and Ogle.

SIXTH DISTRICT.—Lee, Bureau, Putnam, Henry and Rock Island.

SEVENTH DISTRICT –LaSalle, Kendall, Grundy and Will.

EIGHTH DISTRICT - Kankakee, Iroquois, Ford, Livingston, Woodford and Marshall.

NINTH DISTRICT Stark, Peoria, Knox and Fulton

TENTH DISTRICT - Mercer, Henderson, Warren, Hancock, McDonough and Schuyler

ELEVENTH DISTRICT Adams, Brown, Pike, Calhoun, Greene and Jersey

TWELFTH DISTRICT –Scott, Morgan, Cass, Menard, Sangamon and Christian.

THIRTEENTH DISTRICT —Mason, Tazewell, McLean, Logan and DeWitt.

FOURTEENTH DISTRICT. Macon, Piatt, Champaign, Douglas, Coles and Vermilion

FIFTEENTH DISTRICT —Edgar, Clark, Cumberland, Moultrie, Shelby, Effingham, Jasper, Crawford and Lawrence

SIXTEENTH DISTRICT –Montgomery, Favette, Bond, Clinton, Washington, Marion and Clay

SEVENTEENTH DISTRICT –Macoupin, Madison, St Clair and Monroe

EIGHTEENTH DISTRICT —Randolph, Perry, Jackson, Union, Williamson, Johnson, Pope, Massac, Pulaski and Alexander.

NINETEENTH DISTRICT –Richland, Wayne, Edwards, Wabash, Jefferson, Franklin, Hamilton, White, Saline, Gallatin and Hardin.

TRANSACTIONS

STATE BOARD OF AGRICULTURE

Since Close of Winter Meeting of 1878.

MEETINGS DURING THE FAIR.

BREWSTER HOUSE,
FREEPORT, September 16, 1878.
MONDAY, 8 O'CLOCK P. M.

Board met in special session.

President Gillham in the chair.

Present: Vice-Presidents Ellsworth, Emery, Haskell, Moore, Snoad, Beaty, Smith, Scott, Bishop, Pullen, Stookey, Washburn, Landrigan and President Gillham.

The President stated that the objects of the meeting were to hear the reports from the Superintendents of department and to provide necessary conveniences.

Mr. Scott, General Superintendent, stated that he was having the necessary pens floored and covered to accommodate hogs and sheep, in accordance with the instructions of the committee of arrangements, the local committee having failed to provide the accommodations called for in the specifications of requirements.

Mr. Moore, Superintendent of Forage and Stalls, reported a limited number of empty horse and cattle stalls, but likely to be sufficient to accommodate exhibitors en route.

The superintendents of departments reported a large number of entries in their respective departments and a good prospect for an attractive exhibition.

The Auditing Committee reported more than the usual number of applicants for booths, privileges, etc., and that the prospect for good returns from this source was very promising.

Mr. Moore stated that the Court House had been tendered the Board for the Institute Meetings during the week of the Fair, the Board to pay for gas consumed and for services of the janitor.

President Gillham reported having received word from Prof. Worthen of his inability to be present and to read the paper prepared for the institute meeting and styled "The Mineral Resources of Illinois."

Motion of Mr. Emery, carried—

That the President appoint a member of the Board to read Prof. Worthen's paper.

President appointed Mr. Emery.

On motion of Mr. Moore,

Board adjourned to meet on call of the President.

PRESIDENT'S OFFICE,
FAIR GROUNDS, 4 P M., Thursday, Sept. 19, 1878.

Board met in special session.

President Gillham in the chair.

Present: Vice-Presidents Ellsworth, Emery, Periam, Haskell, Moore, Snoad, Cobb, Douglas, Beaty, Scott, Pullen, Stookey and President Gillham.

Mr. Scott offered the following, which was adopted:

WHEREAS, the articles exhibited in tents in the Horticultural and Farm Product Departments have been damaged by the storms of wind and rain and the falling of the tents this afternoon; therefore, be it

Resolved, That the Superintendents in said departments be authorized, in their discretion, to allow exhibitors to remove wholly or in part their exhibit.

On motion of Mr. Moore,

Board adjourned, subject to call of the President,

BREWSTER HOUSE, FREEPORT, 7 P.M., Thursday, Sept 19, 1878

Board met in special session.

President Gillham being absent at the institute meeting,

Vice-President Scott was called to the chair.

Present: Vice-Presidents Ellsworth, Periam, Haskell, Snoad, Cobb, Beaty, Smith, Scott, Bishop, Pullen, Stookey and Landrigan.

Mr. Landrigan, Superintendent of Class B, horses, presented the following informal protest by E. Dillon & Co, of Bloomington, against the award of second premium to R. Holloway, of Monmouth, on stallion three years old and under four, in Lot 28, draft horses other than imported and full blood, said stallion having been bred in Canada.

[Protest]

FREEPORT, ILLINOIS, September 19, 1878.

I hereby protest against the award made on three-year-old stallions, other than full bloods in Class B, Lot 28, on the ground that second premium stallion exhibited by Robert Holloway, is an imported horse, and not entitled to show in that ring.

E. DILLON & CO.

Motion of Mr. Cobb, carried—

That horses bred in Canada shall not be considered by this Board as imported and that the informal protest be not considered.

Secretary presented the following:

FREEPORT, ILL., September 19, 1878

S. D Fisher, Secretary Illinois State Fair:

DEAR SIR:—In harmony with page 5, rule 6, I enter my protest against the award of first premium to (G. A Herrick, Monticello, Ill.,) entry 58, in Class F, Lot 76, as unjust:

1st. Because I have reason to believe it was an act of favoritism.

2d. Because it is inferior to the "Improved Weather Strip," in same Class and Lot, Entry 56, as voluntarily stated by large numbers of first class mechanics and others.

I would like to have the matter referred to a committee of three or five disinterested mechanics or persons of judgment With respect,

L. M NEWELL.

STATE OF ILLINOIS, }
STEPHENSON COUNTY, }

L M. Newell, being duly sworn, doth depose and say that the within statement is true and correct in every particular.

L. M NEWELL

Subscribed and sworn to before me this 19th day of September, 1878

GEORGE WOLF, J. P.

Mr. Beaty, Superintendent Section 1, Class F, Mechanic Arts, stated that the award in question was made by a competent and impartial committee, in whose action he concurred.

Motion of Mr. Scott, carried—

That the protest be declared not sustained.

On motion of Mr. Smith,

The Board adjourned, subject to call of the President.

BREWSTER HOUSE, FREEPORT, 7:30, P M, Friday. Sept. 20, 1878.

Board met in special session.

President Gilham being absent, at the institute meeting,

On motion Mr. Haskell,

Vice President Scott, was called to the chair.

Present: Vice-Presidents Ellsworth, Emery, Haskell, Moore, Snoad, Beaty, Judy, Smith, Scott, Bishop, Pullen, Stookey and Landrigan.

Mr. Judy made a statement of an informal protest entered by Messrs. Strawn, Jackson & Co, of Ottawa, concerning the want of regularity in the voting of the awarding committee, in deciding the second premium in lot 16—herds open to all breeds—for best bull and five cows.

One member of the committee was objected to, and the remaining four committeemen proceeded to make the award—two voting for one herd, and the other two casting their respective votes, one each, for separate herds—not being able to come to a decision, a fifth committeeman was called in, and cast his vote for the herd of Messrs. Pickrell and Kissinger—this herd having already received one vote—there still being no majority in favor of either of the three herds—a sixth committeeman was called in and cast his vote in favor of the herd of Messrs. Pickrell and Kissinger -this herd having received three votes, of the six and one more than either of the other three herds

receiving votes, was awarded the second premium, in accordance with rule ten, governing awarding committees.

The protest was on the ground that the herd awarded the second premium, did not receive a majority of the votes of the committee.

On motion of Mr. Smith,

Further consideration was postponed until the winter meeting.

Mr. Landrigan, Superintendent, Class B, horses, stated that C. E. Borup, of Bureau Junction, had entered a three year old stallion in lot 26, Draft Horses, Imported or Full Blood. Also in lot 27, Sweepstakes for same class of horses—he afterwards entered same stallion in lot 31, Horses for Agricultural Purposes, in violation of rule 11, which prohibits a single animal being exhibited, only as one of a herd or pair, and in sweepstakes in his class (excepting lots 33 and 34).

Mr. Borup first showed in lot 31, Horses for Agricultural Purposes, and received no award—he then showed the same in lot 26, Draft Horses Imported or Full Blood, and was awarded first premium of twenty dollars.

The attention of the committee having been called to the inelligibility of the entry, the decision awarding premium was reconsidered.

Mr. Smith moved,

That the decision of the committee in disallowing the premium, be not approved, and that the award be paid Mr. Borup.

Motion lost.

Mr. Landrigan stated that Mr. Borup failed to show where eligible in lot 27, sweepstakes, claiming that he was not notified to exhibit.

Mr. Landrigan moved,

That Mr Borup be allowed a gratuity of $20.00.

Motion lost.

President Gillham in the chair.

Mr. Scott, General Superintendent, stated that in accordance with instructions, he had sold for $115 00 to J. B. Taylor, of Freeport, the lumber purchased by the Board to floor the sheep and hog pens.

On motion of Mr Haskell,

Mr. Moore was authorized to adjust for the Board any unfinished business at Freeport, in connection with the State Fair.

Motion of Mr. Judy, carried—

That a ring be made for yearling steers over 1 and under 2 years at the Fat Stock Show in December next, in all the lots for cattle and sweepstakes therefor and that the amount of premiums be the same as for older steers in same lots and sweepstakes.

Motion of Mr. Judy, carried –

That President Gillham, Ex-President Reynolds, and Secretary Fisher be appointed a committee to attend to the advertising of the Fat Stock Show.

Motion of Mr. Beaty, carried—

That Messrs. Gillham, Reynolds and Scott be appointed a committee to make the necessary arrangement for stalls and other conveniences required for the Show of Fat Stock in the Exposition Building.

On motion of Mr. Judy,

The Board adjourned.

D. B. GILLHAM, *President.*

S. D. FISHER, *Secretary,*

CONVENTION OF DELEGATES.

FAIR GROUNDS, FREEPORT, ILLINOIS,
WEDNESDAY, September 25, 1878—2:30 P. M.

The Convention of Delegates for election of members of the State Board of Agriculture met at the Secretary's office.

President Gillham called the convention to order, and after stating the objects of the meeting, nominated Hon. J. H. Pickrell, of Macon county, as permanent chairman, who was, on motion, unanimously elected.

On motion of Mr. Dunlap, of Champaign,

S. D. Fisher, of Logan county, was made secretary of the convention.

H. L. Bush, of DuPage, moved the appointment by the Chair of a committee on credentials.

The President appointed as said committee, H. L. Bush, of DuPage, Albert Dunlap, of Champaign and Isaiah Dillon, of McLean.

Committee on credentials retired and after examination of credentials, made the following report:

Chairman of the Convention

Your committee have examined the credentials referred to them and find the following delegates entitled to vote at this election

LIST OF DELEGATES

NAME OF COUNTY BOARD	DELEGATES
Adams County Agricultural Board	Robert Rankin, Wm. A Booth, Richard Seaton
Alexander " "	O Greenbery, Thos J McClure, J O Harman.
Bond " "	
Boone " "	Richard Barnes, L W Lawrence, J L Witbeck
Brown " "	
Bureau " "	
Calhoun " "	
Carroll " "	E L Byington, M Dyslin, J A Melendy
Cass " "	R R. Stevenson, Morrison Graves
Champaign " "	Albert Dunlap, Earnest Dunlap, J. R. Scott
Christian " "	W A Perkins, John B Ricks, John W Hunter
Clark " "	Wm Updyke
Clay " "	
Clinton " "	J N Kerr, W J Harnet, W. W Hooton.
Coles " "	
Cook " "	W J. Ellenwood, H C. Seene, P S Peterson
Crawford " "	Wm Athey, Wm Updyke, Mr Callahan
Cumberland " "	
DeKalb " "	W L F Jones, S. O Vaughn, Harrison Mackey
DeWitt " "	
Douglas " "	John J Irwin, Peter L Dawson, F M Friend
DuPage " "	G W. Roundy, H L Bush, C B Field.
Edgar " "	T. T Thompson, T S Thompson
Edwards " "	John Landrigran,
Effingham " "	T. T Thompson, E H Bishop, J P. M. Howard
Fayette " "	M F Houston
Ford " "	Wm Noel, L B Parr, Chas Bogardus
Franklin " "	C W Webster, Wm R Ward, W C Phipps.
Fulton " "	W. A. McCreary, D W Vittum, Oliver Crissey.
Gallatin " "	John Landrigran "proxy"
Greene " "	Geo W Davis, Henry Tumson, John C Burrus
Grundy " "	Seneca Tupper, A Herferd, E, B. Fletcher
Hamilton " "	
Hancock " "	J T Johnson, C N Dennis, A C Hammond.
Hardin " "	C M Ferrill, James A Lowry, Chas Miller.
Henderson " "	J A. Boynton
Henry " "	A. A. Crane, E G Gilbert
Iroquois " "	W A Boswell, H. B Booth, Isaac W Wilson
Jackson " "	

LIST OF DELEGATES—Continued.

NAME OF COUNTY BOARD.	DELEGATES
Jasper County Agricultural Board...	Robert Athey—Bowman—Freeman.
Jefferson " " ...	John C McConnell, John Landrigan alternate.
Jersey " "	Robert Newton, R S Morris.
Jo Daviess " " ..	S. S. Brown, E. M Bouton, T. Hallett.
Johnson " " ..	...
Kane " " ..	Jon Teft, J Griffith Geo. E Peck.
Kankakee " " ..	I C. Mosier, Fayette Peck, Mark Barton.
Kendall " " ...	Wm T. Henning.
Knox " " .	...
Lake " " ..	J A Mason Geo N, Gridley, Elisha Gridley.
LaSalle " "	A Strawn, J. B Barnes, J. R Shaw.
Lawrence " " ..	Wm T Buchanan, W C Garrard
Lee " " .	H E. Badger, W. H Haskell, H. D Dement.
Livingston " "	F E Day, James R Wash.
Logan " " ..	C L Downey
Macon " "	J H. Pickrell, V Barber, T. C Sterritt.
Macoupin " " ..	...
Madison " " .	D B Gillham, Joseph Gillispie, J. D Miller
Marion " " .	M H Monkhouse, Richard Ray
Marshall " " ..	W Updyke
Mason " " ...	...
Massac " " ...	...
McDonough " "	...
McHenry " " .	Richard Wray, C L Richards, L. Woodard.
McLean " " .	T D Hartson, L F Funk, I. Dillon
Menard " " .	David Grant, C C. Judy, G B Welch
Mercer " "	C. F Durston, D, T Hindman, E. C. Gray.
Monroe " "	...
Montgomery " " .	...
Morgan " " .	F M. Morton, Isaiah Strawn.
Moultrie " " ..	...
Ogle " "	John W. Hitt, J. C Moats, Leander Griffin
Peoria " "	W K Dunlap, O C Parmlee
Perry " " ...	...
Piatt " "	Wm. Voorhies.
Pike " " ...	...
Pope " " ..	...
Pulaski " .	C Haffner, B Robinson, R T Calvin
Putnam " "	J. A Patton.
Randolph " " .	D R McMaster, S. W McKelvy, B Crawford
Richland " "	J Landrigan, J Skeavenglow.
Rock Island " "	...
Saline " "	...
Sangamon " "	Watson Pickrell
Schuyler " "	James A Tool James Montsoth, Simon Doyle
Scott " " ...	Milton W Riggs, Wm. J. Garland, G W Martin.
Shelby " " ..	...
Stark " "	J. H Quinn, J M Thomas, Henry Colwell
St. Clair " "	Thomas A Stookey, Jas P. Slade Jas R Miller
Stephenson " "	Wm Young, E L Cronkrite, Fred Baker.
Tazewell " " ...	...
Union " " .	...
Vermilion " "	...
Wabash " "	M D McClintock
Warren " " .	J A Boynton
Washington " " ..	...
Wayne " " .	Oliver Holmes, Adam Rinard.
White " "	John Landrigan
Whiteside " " ...	M L Coe, Saml Beard, E. W Edson.
Will " "	Jas S Owen, Chas E Kercheval, W. T Nelson
Williamson " " ..	James F Coornell, Chas H. Denison
Winnebago " " .	Hiram R Enoch, Henry P Kimball, John Lake.
Woodford " "	J A Ranney, Isaac Boyes P A Coen

H. L. BUSH
ALBERT DUNLAP, } Committee on Credentials
ISAIAH DILLON.

Motion of Mr. Dunlap, carried—

That where all the delegates are not present those in attendance be allowed to cast the full vote of the county

Motion of Mr. Landrigan, carried—

That numbered slips representing the several congressional districts in the State be placed in a hat and that vice-presidents be elected in the order their districts are drawn by the chairman.

Motion of M. A. Barton, of Kankakee, carried—

That two tellers be appointed.

The Chair appointed M. A. Barton, of Kankakee, and James P. Slade, of St. Clair, as tellers.

Motion of Mr. Downey, of Logan, carried—

That the counties, comprising each congressional district, be called first after nominations therefor, and then the remaining counties of the State in alphabetical order.

The convention then proceeded to the election of president and members of the State Board of Agriculture for the years 1879 and 1880 with the following result:

PRESIDENT:

JAMES R SCOTT.. . . ..Champaign

VICE-PRESIDENTS:

1st	Dist—	LEWIS ELLSWORTH	.Naperville	11th	Dist--	D E. BEATY.. . ..	Jerseyville
2d	"	H D. EMERY	. Chicago	12th	"	J M EPLER	.Virginia
3d	"	J P REYNOLDS	. Chicago	13th	"	W. M SMITH .	...Lexington
4th	"	GEORGE S. HASKELL.	Rockford	14th	"	WM VOORHIES, JR.	Vorhies.
5th	"	J L MOORE	Polo	15th	"	E H BISHOP ...	. Effingham
6th	"	SAMUEL DYSART	Franklin Grove.	16th	"	B PULLEN	Centralia
7th	"	CHARLES SNOAD	Joliet	17th	"	M T STOOKEY	Belleville.
8th	"	EMORY COBB	... Kankakee	18th	"	J M WASHBURN .	Carterville
9th	"	D W. VITTUM, Jr	Canton	19th	"	JOHN LANDRIGAN.	Albion
10th	"	SAMUEL DOUGLAS ..	Monmouth.				

On motion the convention adjourned *sine die.*

S. D. FISHER, *Secretary.*

LIST OF AWARDS

AT THE

ILLINOIS STATE FAIR FOR 1878.

FREEPORT, ILLINOIS

CLASS A—CATTLE.

SAMUEL DYSART—*Superintendent*

LOT 1—SHORT HORN BULLS

Best Bull, 4 years old or over—8 entries:
First Premium, Pickrell & Kissinger, Harristown .. $25 00
Second Premium, R Holloway, Monmouth 15 00

Best Bull, 3 years old and under 4 years—4 entries:
First Premium, Strawn, Jackson & Co , Ottawa . . 25 00
Second Premium, A M. Winslow's Sons, Kankakee 15 00

Best Bull, 2 years old and under 3 years 2 entries
First Premium, Pickrell & Kissinger Harristown 25 00
Second Premium, Wm. M Mason, Polo . . . 15 00

Best Bull, 1 year old and under 2 years—3 entries:
First Premium, Pickrell & Kissinger, Harristown 20 00
Second Premium, Hostetter Bros , Mt Carroll . 10 00

Best Bull Calf, under 1 year and over 6 months—15 entries.
First Premium, A M Winslow's Sons, Kankakee . 15 00
Second Premium, J Vought, Baileyville . 10 00

Best Bull Calf, under 6 months- 3 entries:
First Premium, A M Winslow's Sons Kankakee 15 00
Second Premium, Ryburn Bros , Bloomington . . 10 00

Awarding Committee—Edgar Sean, William Noel, E C Lawrence, C M. Saxby, M A Barton.

LOT 2—SHORT HORN COWS AND HEIFERS

Best Cow, 4 years old or over—9 entries.
First Premium, Strawn, Jackson & Co . Ottawa 25 00
Second Premium, Pickrell & Kissinger, Harristown 15 00

Best Cow, 3 years old and under 4 years—7 entries·
First Premium, Pickrell & Kissinger, Harristown . . . 25 00
Second Premium, Pickrell & Kissinger, Harristown 15 00

Best Heifer, 2 years old and under 3—5 entries:
First Premium, Pickrell & Kissinger, Harristown 25 00
Second Premium, Pickrell & Kissinger, Harristown 15 00

Best Heifer, 1 year old and under 2 years—13 entries:
First Premium, Pickrell & Kissinger, Harristown 20 00
Second Premium, Ryburn Bros , Bloomington 10 00

Best Heifer Calf, under 1 year old and over 6 months—12 entries:
First Premium, A M. Winslow's Sons, Kankakee 15 00
Second Premium, Strawn, Jackson & Co., Ottawa 10 00

Best Heifer Calf, under 6 months old—4 entries:
First Premium, Strawn, Jackson & Co., Ottawa..... 15 00
Second Premium, Pickrell & Kissinger, Harristown..... 10 00

Awarding Committee—S. G Baird, Sterling: Ashley Knapp, Rockford; Moses J Wentworth, Chicago.

LOT 3-SWEEPSTAKES—SHORT HORNS.

Best Bull, of any age—14 entries.
Premium, Pickrell & Kissinger, Harristown 25 00

Best Cow or Heifer, of any age—12 entries:
Premium, Pickrell & Kissinger, Harristown 25 00

Awarding Committee—J S. Latimer, Abingdon; John Cheshire; Simon Sheaff, Holcomb; Thos Murray, Polo; Chas Collard.

LOT 4—HEREFORD—BULLS

Best Bull, 4 years old and over—2 entries.
First Premium, T. L Miller, Beecher $25 00
Second Premium, Wm Powell, Beecher 15 00

Best Bull, 3 years old and under 4 years—no entries.

Best Bull, 2 years old and under 3 years 1 entry:
First Premium, T L Miller, Beecher 25 00

Best Bull, 1 year old and under 2 years—6 entries.
First Premium, Wm Constable Beecher 20 00
Second Premium, T. L Miller, Beecher 10 00

Best Bull Calf, under 1 year and over 6 months -4 entries
First Premium, T L Miller, Beecher 15 00
Second Premium, T L Miller, Beecher 10 00

Best Bull Calf, under 6 months old—1 entry:
First Premium, T L Miller, Beecher 15 00

Awarding Committee- E H Seward, Marengo; James Skeavington, Albion; John Turnbull, Elmira.

LOT 5—HEREFORD—COWS AND HEIFERS

Best Cow, 4 years old or over—7 entries
First Premium, T. L. Miller, Beecher $25 00
Second Premium, T L Miller, Beecher 15 00

Best Cow, 3 years old and under 4 years—2 entries
First Premium, T L Miller, Beecher 25 00
Second Premium, T. L Miller, Beecher 15 00

Best Heifer, 2 years old and under 3 years—3 entries
First Premium T. L Miller, Beecher 25 00
Second Premium, T L. Miller, Beecher 15 00

Best Heifer, 1 year old and under 2 years—5 entries;
First Premium, Wm Powell, Beecher 20 00
Second Premium, T L. Miller, Beecher 10 00

Best Heifer Calf, under 1 year and over 6 months—3 entries
First Premium, T L Miller, Beecher 15 00
Second Premium, T L Miller, Beecher 10 00

Best Heifer Calf, under 6 months old—2 entries:
First Premium, Wm Powell, Beecher 15 00
Second Premium, T L Miller, Beecher 10 00

Awarding Committee—W. K. Patrick, Bloomingdale, L J Witbeck, Belvidere, Edgar Scad, Warren

LOT 6—SWEEPSTAKES—HEREFORDS

Best Bull, any age—5 entries:
Premium, T L. Miller, Beecher $25 00

Best Cow or Heifer, of any age—6 entries:
Premium, T. L. Miller, Beecher 25 00

Awarding Committee—J. Cotton, G Hicks, G M. Brown

LOT 7—HOLSTEIN BULLS

Best Bull, 4 years old or over—1 entry
First Premium, M L Lowry Pecatonica $25 00

Best Bull 3 years old and under 4—2 entries
First Premium, W Laramy, Beloit, Wis 25 00
Second Premium, Morris Gaffin, Wales 15 00

Best Bull 2 years old and under 3 years—2 entries
First Premium, George E Brown Elgin 25 00
Second Premium, Dexter Severy, Leland 15 00

Best Bull, 1 year old and under 2 years—2 entries
First Premium, George E Brown, Elgin 20 00
Second Premium, George E Brown, Elgin 10 00

Best Bull Calf, under 1 year old and over 6 months—3 entries
First Premium, George E Brown Elgin 15 00
Second Premium, George E Brown, Elgin 10 00

Best Bull Calf under 6 months old—6 entries
First Premium, Dexter Severy, Leland 15 00
Second Premium, George E Brown, Elgin 10 00

Awarding Committee—Alfred H Wise, Freeport, J B Barnes Ottawa, P Winslow, Kankakee

LOT 8—HOLSTEIN—COWS AND HEIFERS

Best Cow, 4 years old or over—6 entries
First Premium, George E Brown Elgin $25 00
Second Premium, Dexter Severy, Leland 15 00

Best Cow 3 years old and under 4 years—4 entries
First Premium, George E Brown Elgin 25 00
Second Premium, Morris Gaffin, Wales 15 00

Best Heifer, 2 years old and under 3 years—4 entries
First Premium George E Brown, Elgin 25 00
Second Premium, George E Brown, Elgin 15 00

Best Heifer, 1 year old and under 2 years—4 entries
First Premium, George E Brown, Elgin 20 00
Second Premium Dexter Severy, Leland 10 00

Best Heifer Calf, under 1 year old and over 6 months—1 entry
First Premium, George E Brown Elgin 15 00

Best Heifer Calf, under 6 months old 2 entries
First Premium, Dexter Severy, Leland 15 00
Second Premium, T W Laramy, Beloit, Wis 10 00

Awarding Committee—Alfred H Wise, Freeport, P Winslow, Kankakee, J B Barnes, Ottawa

LOT 9—SWEEPSTAKES—HOLSTEINS

Best Bull, of any age—9 entries
Premium, George E Brown, Elgin $25 00

Best Cow or Heifer, of any age—11 entries
Premium, Dexter Severy, Leland 25 00

Awarding Committee—A Rinard, Fairfield, W A Pratt, Elgin, W W Smith, Downers Grove, J Cotton, Rockford, T H Baker

LOT 10—DEVONS

Best Bull, 4 years old or over—1 entry
First Premium, L F Ross, Avon 25 00

Best Bull 3 years old and under 4—1 entry
First Premium, W T Smith, Elkhorn, Wis 25 00

Best Bull 2 years old and under 3 years—1 entry
First Premium, L F Ross Avon 25 00

Best Bull, 1 year old and under 2 years—1 entry
First Premium, L F Ross, Avon 20 00

Best Bull Calf, under 1 year old and over 6 months—2 entries
First Premium, W T Smith, Elkhorn, Wis 15 00
Second Premium W T Smith Elkhorn, Wis 10 00

Best Bull Calf under 6 months old 4 entries
First Premium, L F Ross Avon 15 00
Second Premium W T Smith, Elkhorn Wis 10 00

COWS AND HEIFERS

Best Cow, 4 years old or over—5 entries
First Premium, L F Ross Avon 25 00
Second Premium, L F Ross Avon 15 00

Best Cow 3 years old and under 4 3 entries
First Premium L F Ross Avon 25 00
Second Premium, W T Smith Elkhorn Wis 15 00

Best Heifer 2 years old and under 3 3 entries
First Premium L F Ross Avon 25 00
Second Premium L F Ross Avon 15 00

Best Heifer Calf 1 year old and under 2 years 2 entries
First Premium W T Smith Elkhorn, Wis 20 00
Second Premium, L F Ross Avon 10 00

Best Heifer Calf under 1 year and over 6 months—No entries

Best Heifer Calf, under 6 months—1 entry
First Premium L F Ross Avon 15 00

Awarding Committee—J H Sanders Chicago Z G Jackson Ottawa, J L Owen, Mokena

LOT 11—SWEEPSTAKES—DEVONS

Best Bull, of any age—4 entries
Premium, L F Ross Avon 25 00

Best Cow or Heifer any age 5 entries
Premium, L F Ross, Avon 25 00

Awarding Committee—A Rinard Fairfield Charles Saxby Freeport, L J Witbeck Belvidere

LOT 12—AYSHIRES

Best Bull, 4 years old or over—4 entries
First premium, Bush & Blodget Downer's Grove $25 00
Second premium J A Patterson Rock Falls 15 00

Best Bull, 3 years old and under 4 years 3 entries
First premium Bush & Blodget Downer's Grove 25 00
Second premium John Stewart Blackberry 15 00

Best Bull 2 years old and under 3 years—2 entries
First premium N N Jones Normal 25 00
Second premium J A Patterson Rock Falls 15 00

Best Bull 1 year old and under 2 years 3 entries
First premium J A Patterson Rock Falls 20 00
Second premium, J A Patterson Rock Falls 10 00

Best Bull Calf under 1 year and over 6 months—3 entries
First premium N N Jones Normal 15 00
Second premium J A Patterson Rock Falls 10 00

Best Bull Calf under 6 months—3 entries
First premium John Stewart Blackberry 15 00
Second premium, John Stewart, Blackberry 10 00

COWS AND HEIFERS

Best Cow 4 years old or over—4 entries
First premium John Stewart, Blackberry $25 00
Second premium John Stewart Blackberry 15 00

Best Cow, 3 years old and under 4—3 entries
First premium John Stewart Blackberry 25 00
Second premium, John Stewart, Blackberry 15 00

Best Heifer, 2 years old and under 3—4 entries:
First premium, John Stewart, Blackberry 25 00
Second premium, John Stewart, Blackberry 15 00

Best Heifer, 1 year old and under 2—5 entries:
First premium, J A. Patterson, Rock Falls 20 00
Second premium John Stewart, Blackberry 10 00

Best Heifer Calf, under 1 year old and over 6 months--1 entry:
First premium, J A Patterson, Rock Falls 15 00

Best Heifer Calf, under 6 months old—4 entries
First premium, John Stewart, Blackberry 15 00
Second premium, John Stewart, Blackberry 10 00

Awarding Committee —J H Sanders, Z O Jackson, C B. Field.

LOT 13—SWEEPSTAKES--AYRSHIRES

Best Bull any age—8 entries:
Premium S W Kingsley, Dundee $25 00

Best Cow or Heifer any age—7 entries
Premium, John Stewart, Blackerry 25 00

Awarding Committee.--A Rinard, Fairfield; John Landrigan, Albion; V Barber, Decatur.

LOT 14—JERSEYS

Best Bull, 4 years old or over—3 entries:
First Premium, N N Jones, Normal $25 00
Second Premium, Hostetter Bros., Mt Carroll 15 00

Best Bull, 3 years old and under 4 years—2 entries:
First Premium, V Barber, Decatur 25 00
Second Premium, J. E Cronk, Belvidere 15 00

Best Bull, 2 years old and under 3 years -1 entry.
Second Premium, J Weber Adams, Cedarville 15 00

Best Bull, 1 year old and under 2 years—3 entries:
First Premium, V. Barber, Decatur 20 00
Second Premium, N N Jones, Normal 10 00

Best Bull, under 1 year and over 6 months—4 entries:
First Premium, Hostetter Bros , Mt Carroll 15 00
Second Premium, V. Barber, Decatur 10 00

Best Bull Calf, under 6 months—2 entries.
First Premium, V Barber, Decatur 15 00
Second Premium, N N Jones, Normal 10 00

COWS AND HEIFERS

Best Cow, 4 years old or over—9 entries:
First Premium, V Barber, Decatur $25 00
Second Premium, J Weber Adams, Cedarville 15 00

Best Cow, 3 years old and under 4 years—5 entries:
First Premium, V Barber, Decatur 25 00
Second Premium, V Barber, Decatur 15 00

Best Heifer, 2 years old and under 3 years -5 entries:
First Premium, V Barber, Decatur 25 00
Second Premium, J. Weber Adams, Cedarville 15 00

Best Heifer, 1 and under 2 years—5 entries·
First Premium, Hostetter Bros., Mt Carroll 20 00
Second Premium, J Weber Adams, Cedarville 10 00

Best Heifer, 6 months and under 1 year--3 entries.
First Premium, Hostetter Bros , Mt Carroll 15 00
Second Premium, V Barber, Decatur 10 00

Best Heifer, under 6 months—7 entries·
First Premium, V Barber. Decatur 15 00
Second Premium, Hostetter Bros , Mt Carroll 10 00

Awarding Committee—C C. Buell, Rockfalls; Wm M Holmes, Greenwich, N Y; Jonathan Periam, Irving Park

LOT 15—SWEEPSTAKES—JERSEYS.

Best Bull, any age—4 entries:
Premium, J. E. Cronk, Belvidere $25 00

Best Cow or Heifer, any age—10 entries:
Premium, V. Barber, Decatur 25 00

Awarding Committee—H M Winslow, Kankakee; L. J. Witbeck, Belvidere; Chas M Saxby, Freeport

LOT 16—HERDS.

OPEN TO ALL BREEDS

Best Bull and 5 Cows or Heifers, 1 year old and upward, owned by one individual or previously existing firm—9 entries:
First Premium, Pickrell & Kissinger, Harristown $100 00
Second Premium, Pickrell & Kissinger, Harristown 50 00

Best 5 head of Calves, male or female, under 1 year old and owned by one individual or previously existing firm—7 entries:
First Premium, A M Winslow's Sons, Kankakee 50 00
Second Premium, Ryburn Bros, Bloomington 25 00

Awarding Committee—D Gore, Carlinville; Simon Sheaf; Thomas Murray, Polo; W W Riggs, Riggston

LOT 17—HERDS FROM ONE BULL

OPEN TO ALL BREEDS.

Best 5 Cattle, male or female, of any age without regard to ownership, the get of one bull, the sire to be shown with the herd and considered in making the award—6 entries.
First Premium, T L Miller, Beecher $100 00
Second Premium, Ryburn Bros, Bloomington 50 00

Awarding Committee—E H. Sewart, Marengo; H Tennison; Thos C Sterrett, Warrensburg; W Vorhies, Vorhies; T W Shelton

LOT 18—BREEDER'S RING

OPEN TO ALL BREEDS

Best 5 Cattle, of one breed, male or female, over 1 year old, bred and owned by the exhibitor—4 entries:
First Premium, Pickrell & Kissinger, Harristown $100 00
Second Premium, Ryburn Bros., Bloomington 50 00

Awarding Committee—L W Sheldon, Union; Thos C Sterrett, Warrensburg; W Vorhies, Vorhies; H. Tennison, White Hall

LOT 19—SWEEPSTAKES.

OPEN TO ALL BREEDS

Best Bull, of any age—20 entries.
First Premium, A. M Winslow's Sons, Kankakee $100 00
Second Premium, Pickrell & Kissinger, Harristown 50 00

Best Cow or Heifer, of any age—22 entries:
First Premium, Pickrell & Kissinger, Harristown 100 00
Second Premium, Pickrell & Kissinger, Harristown 50 00

Awarding Committee—George Reed, Belvidere; J E. Cronk, Belvidere; David Shaff, Holcomb; Wm Stocking, Rochelle; Chas M Saxby, Freeport

CLASS B—HORSES, JACKS AND MULES.

JOHN LANDRIGAN. *Superintendent.*

LOT 20—THOROUGHBREDS

STALLIONS.

Best Stallion, 4 years old or over—3 entries:
First Premium, G W. Nesbitt, Sycamore $25 00

Best Stallion 3 years old and under 4 years -No entry

Best Stallion Colt, 2 years old and under 3 years—2 entries:
First Premium, Wiley Buckles Champaign ... 20 00
Second Premium, G. W. Nesbitt, Sycamore ... 10 00

Best Stallion Colt, 1 year old and under 2 years—2 entries:
First Premium, G W Nesbitt, Sycamore ... 15 00
Second Premium, Wiley Buckles, Champaign ... 10 00

Best Stallion Colt under 1 year old—No entry

MARES

Best Mare, 4 years old or over 2 entries.
First Premium, Wiley Buckles, Champaign ... $25 00
Second Premium, G. W. Nesbitt, Sycamore ... 15 00

Best Mare, 3 years old and under 4 years—No entry.

Best Filley, 2 years old and under 3 years—1 entry:
Second Premium, G. W Nesbitt, Sycamore ... 10 00

Best Filley, over 1 year old and under 2 years—1 entry:
First Premium, G. W Nesbitt, Sycamore ... 15 00

Best Mare Colt, under 1 year old—1 entry.
First Premium, Wiley Buckles, Champaign ... 15 00

BROOD MARES.

Best Brood Mare, to be shown with two of her colts under 2 years of age:
Premium, Wiley Buckles, Champaign ... $30 00

Awarding Committee—D N Gross, Naperville; John Q Harmon, Cairo; Bruno Gansel, Hyde Park

LOT 21—SWEEPSTAKES—THOROUGHBREDS

Best Stallion, of any age, to bridle—6 entries.
Premium, G W Nesbitt, Sycamore ... $50 00

Best Mare, of any age, to bridle—3 entries:
Premium, G W Nesbitt, Sycamore ... 50 00

Awarding Committee—W J Neely, Ottowa; V P. Richmond, Moro; N L Bust

LOT 22- ROADSTERS

STALLIONS

Best Stallion, 4 years old or over—7 entries:
First Premium, E T Billmire, Cherry Valley ... $25 00
Second Premium, Charles Carr, Freeport ... 15 00

Best Stallion, 3 years old and under 4 years—8 entries:
First Premium, E, T Billmire, Cherry Valley ... 20 00
Second Premium, E T Billmire, Cherry Valley ... 10 00

Best Stallion, 2 and under 3 years—2 entries
First Premium, Charles Duncan, Sycamore ... 20 00

Best Stallion, 1 and under 2 years—1 entry:
First Premium, F. Wyman, Sycamore ... 15 00

Best Stallion Colt, under 1 year old—7 entries:
First Premium, B Vought, Batleyville ... 15 00
Second Premium, E Johnson, Beason. ... 10 00

MARES.

Best Mare, 4 years old or over—6 entries:
First Premium, E. T. Billmire, Cherry Valley 25 00
Second Premium, S. T. Taylor, Freeport 15 00

Best Mare, 3 and under 4 years—6 entries:
First Premium, E. T. Billmire, Cherry Valley 20 00
Second Premium, Wiley Buckles, Champaign 10 00

Best Filley, 2 and under 3 years—6 entries:
First Premium, Mathew Marion, Freeport 20 00
Second Premium, Samuel Markel, Freeport 10 00

Best Filley, 1 and under 2 years—3 entries:
First Premium, L. A. Kyle, Freeport 15 00
Second Premium, Dr. Jenks, Rochelle 10 00

Best Mare Colt, under 1 year old—6 entries:
First Premium A. Armstrong, Beason 15 00
Second Premium, Thomas Emerson, Chana 10 00

BROOD MARES

Best Brood Mare, to be shown with two of her colts under 2 years of age—2 entries:
Premium L A Kyle, Freeport $30 00

Awarding Committee—Seneca Tupper, Morris; H Hemstrong, Beason; M H. Fass, Hyde Park; J S. Harman, Cairo; Bruna Gansel, Hyde Park; W J Neely, Ottawa

LOT 23—SWEEPSTAKES—ROADSTERS

Best Stallion, of any age—8 entries:
Premium, Charles M Sasoby, Freeport $100 00

Best Mare, of any age—8 entries:
Premium, E T Billmire, Cherry Valley 50 00

Awarding Committee—O C Parmely, Peoria; Oliver Holmes, Fairfield, W. J Neely, Ottawa; John S Harman, Cairo; D N Gross, Naperville

LOT 24—HORSES FOR ALL WORK

STALLIONS

Best Stallion, 4 years old or over—13 entries:
First Premium Thomas Emerson, Chana $25 00
Second Premium, George T. Baily, Ballyville 15 00

Best Stallion, 3 and under 4 years—6 entries:
First Premium, E T Billmire, Cherry Valley 20 00
Second Premium, Z T Turner Eleroy 10 00

Best Stallion, 2 and under 3 years—3 entries:
First Premium, Hugh Shannon, Coleta 20 00
Second Premium, Hugh Shannon, Coleta 10 00

Best Stallion Colt, 1 and under 2 years—4 entries:
First Premium, T J Smith, Mt Carroll 15 00
Second Premium, Geo Stevenson, Darlington, Wis 10 00

Best Stallion Colt, under 1 year old—7 entries:
First Premium, George D Adee, South Grove 15 00
Second Premium, McKay & Wells, Mt Carroll 10 00

MARES

Best Mare, 4 years old or over—19 entries.
First Premium A Armstrong, Beason $25 00
Second Premium, Wiley Buckles, Champaign 15 00

Best Filley, 3 and under 4 years—3 entries:
First Premium, A Armstrong, Beason 20 00
Second Premium, Charles Daw, Albany 10 00

Best Filley, 2 and under 3 years—8 entries:
First Premium, William Riley, Winnebago 20 00
Second Premium, R Holloway, Monmouth 10 00

Best Filley, 1 and under 2 years—6 entries:
First Premium, B A Graves, Plattville 15 00
Second Premium, R Holloway, Monmouth 10 00

Best Mare Colt, under 1 year old—8 entries:
First Premium, Geo. D Adee, South Grove 15 00
Second Premium, R Holloway, Monmouth.... 10 00

BROOD MARE.

Best Brood Mare, with two of her colts, under 2 years of age—1 entry:
Premium, R Holloway, Monmouth $30 00

Awarding Committee—John Q. Harman, Cairo; J B. Barnes, Ottawa; James A Perry, Wilmington.

LOT 25—SWEEPSTAKES

HORSES FOR ALL WORK

Best Stallion, of any age—20 entries:
Premium Thomas Emerson, Chana $50 00

Best Mare, of any age—23 entries:
Premium, Wiley Buckles, Champaign 50 00

Awarding Committee—G N Renny, Turner; D O Coe Sterling; Wm P Gray, Jefferson; James S Taggart, Ridott; M Graffs, Virginia

LOT 26—DRAFT HORSES,

Imported or full blood

STALLIONS

Best Stallion, 4 years old or over—11 entries.
First Premium, E Dillon & Co , Normal $25 00
Second Premium, R. Holloway, Monmouth 15 00

Best Stallion, 3 and under 4 years—No entry

Best Stallion Colt, 2 and under 3 years—2 entries.
First Premium, Wm Moffatt & Bro., Paw Paw Grove 20 00
Second Premium, E Dillon & Co , Normal 10 00

Best Stallion Colt, 1 and under 2 years -2 entries·
First Premium, Wm Moffatt & Bro., Paw Paw Grove 15 00
Second Premium, Wm Moffatt & Bro, Paw Paw Grove 10 00

Best Stallion Colt under 1 year - No entry.

Best Mare, 4 years old or over—2 entries
First Premium, Wm Moffatt & Bro , Paw Paw Grove $25 00
Second Premium, E Dillon & Co , Normal 15 00

Best Filley, 3 and under 4 years—1 entry
First Premium, Wm. Moffatt & Bro., Paw Paw Grove 20 00

Best Filley, 2 and under 3 years -2 entries:

First Premium, Wm Moffatt & Bro , Paw Paw Grove 20 00
Second Premium, E Dillon & Co , Normal 10 00

Best Filley, 1 and under 2 years -No entry

Best Mare Colt, under 1 year old—No entry

BROOD MARE

Best Brood Mare, to be shown with two of her colts, under 2 years of age No entry;

Awarding Committee—S. W Riegle, Franklin Grove, James Lake, Rockford; Dr N. H Paaren, Chicago; Oliver Holmes, Fairfield; James M Elroy, Elgin

LOT 27—SWEEPSTAKES—DRAFT

Imported or full blood

Best Draft Stallion, of any age, to bridle—13 entries·
Premium, R Holloway, Monmouth 50 00

Best Draft Mare, of any age, to bridle—5 entries.
Premium, Wm. Moffatt & Bros,, Paw Paw Grove 50 00

Awarding Committee—Moses J. Wentworth, Chicago; A. Biocard, Fairfield; W. E. Bennett, Springfield; E N Raley, Granville; J. E Crows, Belvidere.

LOT 28—DRAFT HORSES

Other than imported and full blood.

STALLIONS

Best Stallion, 4 years old or over—10 entries:
First Premium, H L Messenger, Lockport $25 00
Second Premium, James L Owen, Mokena 15 00

Best Stallion, 3 and under 4 years—8 entries:
First Premium, Edwin Hodgson, El Paso 20 00
Second Premium, R Holloway, Monmouth 10 00

Best Stallion Colt, 2 and under 3 years—4 entries:
First Preminm, Edwin Hodgson, El Paso 20 00
Second Premium, R Holloway, Monmouth 10 00

Best Stallion Colt, 1 and under 2 years—1 entry:
First Premium, E Dillon & Co., Normal 15 00

Best Stallion Colt, under 1 year old—2 entries:
First Premium, Geo. D Adee, South Grove 15 00
Second Premium, E. Dillon & Co , Normal 10 00

MARES

Best Mare, 4 years old or over—11 entries:
First Premium, Jas L. Owen, Mokena $25 00
Second Premium, Wm. Moffatt & Bro., Paw Paw Grove 15 00

Best Filley, 3 and under 4 years—7 entries:
First Premium, Edwin Hodgson, El Paso 20 00
Second Premium, James L Owen, Mokena 10 00

Best Filley, 2 and under 3 years—3 entries;
First Premium, E Dillon & Co., Normal 20 00
Second Premium, C W. Sylvester, Marengo. 10 00

Best Filley, 1 and under 2 years—4 entries:
First Premium, E Dillon & Co , Normal 15 00
Second Premium, E. Dillon & Co., Normal 10 00

Best Mare Colt, under 1 year old—4 entries:
First Premium, Edwin Hodgson, El Paso 15 00
Second Premium, R. Holloway, Monmouth 10 00

BROOD MARE

Best Brood Mare, to be shown with two of her colts, under 2 years of age—1 entry:
Premium, E. Dillon & Co , Normal $30 00

Awarding Committee—James McElroy, Elgin; John Virgin, Fairbury; Oliver Holmes, Fairfield; C H Green, Ottawa; Gus Luke, Rockford; S H Riegle, Franklin Grove

LOT 29—SWEEPSTAKES—DRAFT

Other than imported and full blood

Best Draft Stallion, of any age, to bridle 19 entries;
Premium, James L Owen, Mokena 50 00

Best Draft Mare, of any age to bridle—14 entries.
Premium, James L Owen Mokena 50 00

Awarding Committee—James Luke, Rockford; James McElroy, Elgin; N. H. Paaren, Chicago; Oliver Holmes, Fairfield

LOT 30—DRAFT TEAM.

For best team of draft horses, to consist of a pair of Mares or of Geldings, to be shown to Farm Wagon—6 entries.
First Premium, E. Dillon & Co., Normal $40 00
Second Premium, James L Owen, Mokena 20 00

Awarding Committee—J. Q. Harman, Cairo; James A. Perry, Wilmington; J Gillespie, Edwardsville.

LOT 31—HORSES FOR AGRICULTURAL PURPOSES

STALLIONS

Best Stallion, 4 years old or over—6 entries:
First Premium, Charles Welsh, Argo $25 00
Second Premium, E. Dillon & Co., Normal 15 00

Best Stallion, 3 and under 4 years—11 entries:
First Premium, Edwin Hodgson, El Paso 20 00
Second Premium, Wm Moffatt Bros , Paw Paw Grove 10 00

Best Stallion Colt, 2 and under 3 years—5 entries:
First Premium, Wm Moffatt Bros., Paw Paw Grove... . . .. 20 00
Second Premium, H R Hoffman, Woosung 10 00

Best Stallion Colt, 1 and under 2 years 5 entries.
First Premium, Edwin Hodgson, El Paso . 15 00
Second Premium, Edwin Hodgson, El Paso 10 00

Best Stallion Colt, under 1 year old—5 entries:
First Premium, J W Stock, Elcroy . . 15 00
Second Premium, R Holloway, Monmouth 10 00

MARES

Best Mare, 4 years old or over—13 entries·
First Premium, J L Owen, Mokena $25 00
Second Premium, Wm Moffatt Bros , Paw Paw Grove . . . 15 00

Best Mare, 3 and under 4 years 7 entries
First Premium, E Dillon & Co , Normal 20 00
Second Premium, D McDiumod, Burlington . . . 10 00

Best Filley, 2 and under 3 years—5 entries:
First Premium, E Dillon & Co , Normal ... 20 00
Second Premium, S Judd, Wenona 10 00

Best Filley, 1 and under 2 years- 8 entries.
First Premium, R Holloway, Monmouth 15 00
Second Premium, George D Adee, South Grove 10 00

Best Mare Colt, under 1 year old—7 entries.
First Premium, George D Adee, South Grove . . . 15 00
Second Premium, Wm Moffatt Bros , Paw Paw Grove . . 10 00

BROOD MARE

Best Mare, to be shown with two of her colts under two years of age—10 entries:
Premium, R Holloway, Monmouth . . 30 00

Awarding Committee -James S. Taggart, Ridott; Thos C. Sterrett, Warrensburg: G. N Rourch, Turner; Wm P Gray, Jefferson

LOT 32--SWEEPSTAKES

Horses for Agricultural Purposes

Best Stallion of any age--20 entries·
Premium, E Dillon & Co , Normal $50 00

Best Mare, of any age -16 entries
Premium, James L Owen, Mokena 50 00

Awarding Committee—N H Paaren, Chicago; H L. Burke, DuPage, W J Neely, Ottawa; V P Richmond, Moro; F Baker, Freeport

LOT 33—BREEDER'S RING

Best 5 Horses or Colts, male or female, of any breed over one year old, bred and owned by the exhibitor—14 entries:
First Premium, Wm Moffatt & Bro , Paw Paw Grove $100 00
Second Premium, E T Billmire, Cherry Valley 50 00

Awarding Committee—W J. Neely, Ottawa; N. H Paaren, Chicago; Solomon Thatcher, Jr., Thatcher's Park; H L. Bush, DuPage; V. P Richmond, Moro; A Rinard, Fairfield

LOT 34—SWEEPSTAKES—BREEDER'S RING

OPEN TO ALL BREEDS.

Stallion showing best 5 sucking foals of either sex—5 entries:
Premium, George D. Adee, South Grove $100 00

Mare showing best 2 colts of either sex to be yearlings or under—6 entries:
Premium, Wiley Buckles, Champaign 50 00

Awarding Committee—Solomon Thatcher, Jr., Thatcher's Park; W. J Neely, Ottawa: N. H. Paaren, Chicago; H. L. Bush, DuPage; V P Richmond, Moro

LOT 35—SADDLE HORSES.

To be exhibited under Saddle

STALLIONS

Best Saddle Stallion, 4 years old or over—No entry

Best Saddle Stallion, under 4 years old—No entry

Best Saddle Mare, 4 years old or over—4 entries:
First Premium, A. Armstrong, Beason $20 00
Second Premium, H H. Rosenstiel, Freeport 10 00

Best Saddle Mare, under 4 years old—2 entries:
Second Premium, B Vought, Baileyville 10 00

GELDINGS

Best Saddle Gelding, 4 years old or over—6 entries.
First Premium, Wiley Buckles, Champaign $20 00
Second Premium, J. A Cochran, Freeport 10 00

Best Saddle Gelding, under 4 years old—
First Premium, J S Bowman, Savannah 20 00

Awarding Committee John Q. Harman, Cairo; W J Neely, Ottawa James A Perry, Wilmington

LOT 36—CARRIAGE HORSES

Best Carriage Team, shown to carriage—16 entries
First Premium, W H Brackett, Rochelle $40 00
Second Premium, Wiley Buckles, Champaign 20 00

Best Family Mare or Gelding to be driven to buggy—16 entries:
First Premium, W P Emmert, Freeport 20 00
Second Premium, J A Robinson, DeKalb 10 00

Awarding Committee—A E Cutler, Rockford, D N Gross, Naperville, Oliver Holmes, Fairfield; John Q Harman, Cairo; Bruno Gansel, Hyde Park

LOT 37—GENTLEMAN'S DRIVING HORSES

Best Pair of Mares, to Pole—10 entries.
First Premium, C M Saxby, Freeport $40 00
Second Premium, A Armstrong, Beason 20 00

Best pair of Geldings, to Pole—3 entries:
First Premium S F Taylor, Freeport 40 00
Second Premium, R Eddie, Pecatonica 20 00

Best Single Stallion, to Harness—4 entries
First Premium, J. B Taylor, Freeport 40 00
Second Premium, J. Harrison, Lanark 20 00

Best single Mare, to harness—9 entries:
First Premium H. G Fowler, Lena 30 00
Second Premium, W H. Mills, Freeport 15 00

Best single Gelding, to harness -15 entries.
First Premium, Seth Scott, Freeport 30 00
Second Premium, R. Eddie, Pecatonica 15 00

Awarding Committee—Richard Oldfield, Downers Grove; T. Baker, Freeport; E. Holloway, Monmouth.

LOT 38—JACKS, JENNETS AND MULES

JACKS

Best Jack, 4 years old or over—4 entries
First Premium, J Mathews Darlington, Wis $25 00
Second Premium, D Marks, Brookfield . . 15 00

Best Jack, 3 and under 4 years—no entry

Best Jack, 2 and under 3 years -1 entry
First Premium, J Mathews, Darlington, Wis 20 00

Best Jack 1 and under 2 years -1 entry:
First Premium, J Mathews Darlington Wis 15 00

Best Jack Sucking Colt - 2 entries
First Premium, Z D Marks Brookfield 10 00
Second Premium, J Mathews Darlington, Wis 5 00

JENNETS

Best Jennet 3 years old or over 3 entries
First Premium, J Mathews, Darlington, Wis 20 00
Second Premium J Mathews, Darlington Wis 15 00

Best Jennet, 2 and under 3 years 1 entry
First Premium, J Mathews, Darlington, Wis 15 00

Best Jennet, 1 and under 2 years
First Premium, J Mathews Darlington, Wis . 10 00

Best Jennet Sucking Colt—no entry .

MULES

Best Mule, 3 years old or over 6 entries
First Premium, S Cook, Harristown 15 00
Second Premium, J W VanMeter, Oneco 10 00

Best Mule 2 and under 3 years 6 entries
First Premium, Z D Marks, Brookfield 15 00
Second Premium, T Engle, Freeport 10 00

Best Mule, 1 and under 2 years 8 entries
First Premium, J S Bowman Savannah 15 00
Second Premium T Engle, Freeport . . . 10 00

Best Sucking Mule 4 entries
First Premium Z D Marks Brookfield 10 00
Second Premium, Z D Marks Brookfield 5 00

Awarding Committee Ellis Dillon, Normal Edwin Hodgson, El Paso, D G Ryburn, Randolph

LOT 39 SWEEPSTAKES FOR JACKS AND JENNETS

Best Jack, of any age, shown with not less than three Mules of his get 2 entries
Premium, J Mathews Darlington Wis $50 00

Best Jennet of any age, to be shown with two of her colts 1 entry
Premium, J Mathews, Darlington, Wis 25 00

Awarding Committee—Abner Strawn, Ottawa, Otis O Wakefield, Ottawa, I L Owen, Mokena

CLASS C—SHEEP.

D W VITTUM, JR, *Superintendent*

LOT 40—LONG WOOLS

RAMS.

Best Ram, 3 years old or over—4 entries:
First premium, Peter Wakem, Whitby, Canada $15 00
Second premium, R Craig, Burnhamthorpe, Canada 10 00

Best Ram, 2 and under three years—4 entries:
First premium, H Lemen, Thornhill, Canada 15 00
Second premium, P Wakem, Whitby, Canada 10 00

Best Ram, 1 and under 2 years—14 entries
First premium, H Lemen, Thornhill, Canada 15 00
Second premium, R Craig, Burnhamthorpe, Canada 10 00

Best Ram Lamb, under 1 year old 10 entries.
First premium, R Craig, Burnhamthorpe, Canada 10 00
Second premium, H Lemen, Thornhill, Canada 5 00

EWES

Best pen 3 Ewes, 3 years old or over—3 entries,
First premium, T. L Miller, Beecher $15 00
Second premium, H Lemen, Thornhill 10 00

Best pen 3 Ewes 2 and under 3 years—3 entries·
First premium, T Miller, Beecher 15 00

Best pen 3 Ewes, 1 and under two years - 5 entries·
First premium, P Wakem Whitby, Canada 15 00
Second premium, T L Miller, Beecher 10 00

Best pen 3 Ewe Lambs, under 1 year - 2 entries.
First premium, R Craig, Burnhamthorpe, Canada 10 00
Second premium, H Lemen, Thornhill, Canada 5 00

Awarding Committee -Edgar Sean, Warren, Ira S Bylington, Freeport; E L Bylington, Lanark

LOT 41—SWEEPSTAKES LONG WOOLS

Best Long Wool Ram, of any age—10 entries:
Premium, Peter Wakem Whitby, Canada $15 00

Best Long Wool Ewe, of any age—12 entries.
Premium, Peter Wakem, Whitby, Canada 15 00

Best Long Wool Ram and 5 Ewes, of any age - 3 entries
Premium, H Lemen, Thornhill, Canada 25 00

Awarding Committee—H G Blak, Mt Carroll; Thomas Hunt, Ridott; J F McKibben, Freeport

LOT 42—MIDDLE WOOLS.

Best Ram, 3 years old or over - 3 entries:
First premium, Pickrell & Kissinger Harristown. $15 00
Second premium, Taylor & Cotton, Waynesville 10 00

Best Ram, 2 and under 3 years - 3 entries:
First premium, Pickrell & Kissinger, Harristown 15 00
Second premium, Luke Teeple, Belvidere 10 00

Best Ram, 1 and upder 2 years—3 entries:
First premium, Pickrell & Kissinger, Harristown 15 00
Second premium, Taylor & Cotton, Waynesville 10 00

Best Ram Lamb, undef 1 year old—5 entries:
First premium, Pickrell & Kissinger, Harristown 10 00
Second premium, Pickrell & Kissinger, Harristown 5 00

Best pen 3 Ewes, 3 years old or over—3 entries.
First premium, Pickrell & Kissinger, Harristown 15 00
Second premium, Taylor & Cotton, Waynesville 10 00

Best pen 3 Ewes, 2 and under 3 years—5 entries:
First premium, Taylor & Cotton, Waynesville 15 00
Second premium, Pickrell & Kissinger, Harristown 10 00

Best pen 3 Ewes, 1 and under 2 years—5 entries:
First Premium, Pickrell & Kissinger, Harristown 15 00
Second Premium, Pickrell & Kissinger, Harristown 10 00

Best pen 3 Ewe Lambs, under 1 year—2 entries:
First Premium, Taylor & Cotton, Waynesville . 10 00
Second Premium, Pickrell & Kissinger, Harristown 5 00

Awarding Committee--P. G. Bander, Rockford, Andrew Oliver, Elmira; W. K. Dunlap.

LOT 43—SWEEPSTAKES—MIDDLE WOOLS.

Best Middle Wool Ram, of any age—6 entries
Premium, Taylor & Cotton, Waynesville $15 00

Best Middle Wool Ewe, of any age—7 entries.
Premium, Pickrell & Kissinger, Harristown 15 00

Best Middle Wool Ram and 5 Ewes—4 entries
Premium, Pickrell & Kissinger, Harristown 25 00

Awarding Committee—V P Richmond, Moro; J H. Quinn, Toulon; N C Gilbert, Geneseo

LOT 44—FINE WOOLS

Best Ram, 3 years old or over—5 entries.
First Premium, E N. Bissell, East Shoreham, Vt . . $15 00
Second Premium, Daniel Kelly, Wheaton . . . 10 00

Best Ram, 2 and under 3 years—6 entries.
First Premium, E N Bissell, East Shoreham, Vt 15 00
Second Premium, Taylor & Bro , Waynesville . 10 00

Best Ram, 1 and under 2 years—11 entries·
First Premium, E. N Bissell, East Shoreham, Vt ... 15 00
Second Premium, S R McFadden, Atlanta 10 00

Best Ram Lamb, under 1 year old—4 entries:
First Premium, S R McFadden, Atlanta 10 00
Second Premium, F E Day, Streator 5 00

EWES

Best pen 3 Ewes, 3 years old or over—7 entries:
First Premium, Daniel Kelly, Wheaton $15 00
Second Premium, S R McFadden, Atlanta 10 00

Best pen 3 Ewes, 2 and under 3 years—9 entries:
First Premium, Taylor & Bro , Waynesville 15 00
Second Premium, T C Lippitt, Monmouth 10 00

Best pen 3 Ewes, 1 and under 2 years—6 entries:
First Premium, F E Day, Streator 15 00
Second Premium, T C Lippitt, Monmouth 10 00

Best pen 3 Ewe Lambs, under 1 year—7 entries
First Premium, T C Lippitt, Monmouth . 10 00
Second Premium, F E Day, Streator 5 00

Awarding Committee—John Turnbull, Elmira; V P Richmond, Moro; Geo E. Peck, Geneva.

LOT 45—SWEEPSTAKES—FINE WOOL

Best Fine Wool Ram, of any age—12 entries
Premium, S R. McFadden, Atlanta ... $15 00

Best Fine Wool Ewe, of any age—16 entries:
Premium, Daniel Kelly, Wheaton 15 00

Best Fine Wool Ram and 5 Ewes, of any age—5 entries:
Premium, T C Lippitt, Monmouth 25 00

Awarding Committee—W. C Vandercook, Cherry Valley; Fred Collison, Richmond; D. J. Piper

LOT 46—BREEDERS RING.

Open to all breeds

Best 10 Sheep, same breed, of any age, to be owned and exhibited by the breeder—9 entries:
First Premium, Pickrell, & Kissinger, Harristown $25 00
Second Premium, H Lemon, Thornhill, Canada 15 00

Awarding Committee—Adam Wilson, Freeport; N H Hollingsworth, Freeport; C M. Knapp, Baileyville

LOT 47—FAT SHEEP.

Best 3 Fat Sheep, 2 years old or over—8 entries:
Premium, Robert Craig, Burnhamthorpe, Canada $15 00

Best 3 Fat Sheep, under 2 years old—3 entries:
Premium, Robert Craig, Burnhamthorpe, Canada 15 00

Awarding Committee—Henry Lichtenberger, Freeport, Andrew Oliver, Elmira; A C McIntire, Mendota

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CLASS D—SWINE.

M. T STOOKEY, *Superintendent*

LOT 48—BERKSHIRE

BOARS

Best Boar, 2 years old or over—5 entries.
First premium, Hewer Bros, Belvidere $20 00
Second premium, W C Norton, Aldensville, Pa. 10 00

Best Boar, 1 and under 2 years—7 entries:
First premium, Robert Craig Burnhamthorpe, Canada 20 00
Second premium, Robert Craig, Burnhamthorpe, Canada 10 00

Best Boar, 6 months old and under 1 year—8 entries:
First premium, Hewer Bros., Belvidere 15 00
Second premium, Hewer Bros, Belvidere 10 00

Best Boar under 6 months old—17 entries:
First premium, Hewer Bros, Belvidere 10 00
Second premium, Geo Smith Holcomb 5 00

SOWS

Best Sow, 2 years old or over—8 entries.
First premium, T L Miller, Beecher 20 00
Second premium, Geo Smith, Holcomb 10 00

Best Sow, 1 and under 2 years--11 entries:
First premium, Hewer Bros., Belvidere. 20 00
Second premium, Hewer Bros , Belvidere 10 00

Best Sow, 6 months and under 1 year—7 entries:
First premium, Hewer Bros., Belvidere . . . 1 00
Second premium, W C Norton, Aldenville . . . 10 00

Best Sow, under 6 months old--14 entries:
First premium, T L. Miller, Beecher . . . 10 00
Second premium, Hewer Bros., Belvidere 5 00

Best Sow, with litter of her own sucking pigs, not less than 5, under 3 months--
2 entries:
First premium, T L Miller, Beecher . . 20 00

Awarding Committee--W J Miller, Belleville: H L Pickering, La Moille; Isaac Boies, Cazenovia

LOT 49--SWEEPSTAKES--BERKSHIRE

Best Boar, of any age -16 entries
Premium, Hewer Bros , Belvidere $20 00

Best Sow, of any age--19 entries:
Premium, Robert Craig, Burnhamthorpe, Canada . . 20 00

Awarding Committee--George H Stookey Freeburg; Isaac Boys, Cazenovia; Robert Mitchell, Princeton, Thomas Neil, Peoria; John T Hearsmann, Cairo

LOT 50--CHESTER WHITE.

BOARS

Best Boar, 2 years old or over--7 entries.
First premium, Luke Teeple, Belvidere $20 00
Second premium, E. R Moody, Eminence 10 00

Best Boar, 1 and under 2 years--7 entries:
First premium, Taylor Bros , Waynesville 20 00
Second premium, Hurley Bros , Mt Carroll .. 10 00

Best Boar, 6 months and under 1 year- 13 entries·
First premium, M E. Newbern, Hennipin 15 00
Second premium, Taylor Bros , Waynesville .. 10 00

Best Boar, under 6 months old--10 entries.
First premium, M E Newbern, Hennepin 10 00
Second premium, S. N. Wright, South Elgin 5 00

SOWS

Best Sow, 2 years old or over—10 entries·
First premium, M E Newbern, Hennepin . $20 00
Second premium, Luke Teeple, Belvidere 10 00

Best Sow, 1 and under 2 years—12 entries:
First premium, M E Newbern, Hennepin 20 00
Second premium, Luke Teeple, Belvidere 10 00

Best Sow, 6 months and under 1 year—7 entries;
First premium Taylor Bros , Waynesville 15 00
Second premium, Roger Miller, Delevan, Wis 10 00

Best Sow, under 6 months old—12 entries·
First premium, E R Moody, Emenence, Ky 10 00
Second premium, Taylor Bros., Waynesville 5 00

Best Sow, with litter of her own sucking pigs not less than 5, under 3 months--
4 entries:
First premium, Emry Bros., Canton 20 0
Second premium, H C Stoll, Frankfort. 10 00

Awarding Committee—Otis O. Wakefield, Ottawa; C E Kirchival; Joliet; S. F Gibb, Sheridan

LOT 51—SWEEPSTAKES—CHESTER WHITE.

Best Boar of any age -16 entries:
Premium, M. E Newbern, Hennepin $20 00

Best Sow, of any age—15 entries:
Premium, E R. Moody, Eminence, Ky 20 00

Awarding Committee—D B. Haight, Naperville; A Crell, Rockford; Jacob Wheeler, Havana; K Paulin, Tuscola; Jeremiah Davis, Davis Junction

LOT 52—POLAND CHINA

BOARS

Best Boar, 2 years old or over - 7 entries:
First premium, B. J. Orton, Cambridge $20 00
Second premium, George A Wise, Wenona 10 00

Best Boar, 1 and under 2 years—8 entries.
First premium, R S Grimes, Wenona 20 00
Second premium, Emery Bros , Canton 10 00

Best Boar 6 months old and under 1 year—11 entries:
First premium, R S Grimes, Wenona 15 00
Second premium, W W Ellsworth, Woodstock 10 00

Best Boar, under 6 months—83 entries:
First premium, B. J. Orton Cambridge 10 00
Second premium, G W Hunt, Greenwood 5 00

SOWS

Best Sow, 2 years old or over—12 entries.
First premium, B J Orton Cambridge $20 00
Second premium, Geo A. Wise, Wenona 10 00

Best Sow, 1 and under 2 years—17 entries;
First premium, B J Orton, Cambridge .. 20 00
Second premium, Emery Bros , Canton 10 00

Best Sow, 6 months and under 1 year—18 entries:
First premium W C Castle, Wilmington 15 00
Second premium, W C Castle, Wilmington 10 00

Best Sow, under 6 months old—62 entries.
First premium, W W Ell-worth, Woodstock 10 00
Second premium, W. J Orton, Cambridge 5 00

Best Sow, with litter of her own Sucking Pigs not less than 5, under 3 months—2 entries.
First premium, Emery Bros , Canton 20 00
Second premium, W. C Stoll, Frankfort 10 00

Awarding Committee—D E. Jacobs, Galva; A A Crane, Osco; Wm T Henning, Plano; A E. Thummel, Sterling

LOT 53—SWEEPSTAKES—POLAND CHINA

Best Boar, of any age—49 entries:
Premium, Geo. A Wise, Wenona .. $20 00

Best Sow, of any age—20 entries:
Premium, H C. Castle, Wilmington 20 00

Awarding Committee—M E Newbern, Hennepin; Geo N. Dunlap, Bloomington; Alfred H. Wise, Freeport

LOT 54—SUFFOLK, SMALL YORKSHIRE, SHORT-FACED LANCASHIRE, AND OTHER SMALL DISTINCT BREEDS

Best Boar, 2 years old or over—6 entries:
First premium, G. B. Roe, Paines Point $20 00
Second premium, H. C Stoll, Frankfort 10 00

Best Boar, 1 and under 2 years--7 entries:
First premium, H. C Stoll, Frankfort. 20 00
Second premium, Taylor Bros , Waynesville 10 00

Best Boar, 6 months and under 1 year--7 entries:
First premium, S H & A E. Joiner, Janesville, Wis . . 15 00
Second premium, Edward Fries, Sherrells Mount, Iowa 10 00

Best Boar, under 6 months old- 10 entries.
First premium, S H & A E Joiner, Janesville, Wis 10 00
Second premium, Taylor Bros , Waynesville, Ill 5 00

SOWS

Best Sow, 2 years old or over—8 entries
First premium, Geo Stephenson, Darlington, Wis 20 00
Second premium, S H & A E Joiner, Janesville, Wis . . . 10 00

Best Sow, 1, and under 2 years—11 entries
First premium, R M Hoe, Morrissiana, N Y . . . 20 00
Second premium, Taylor Bros , Waynesville . 10 00

Best Sow, 6 months old and under 1 year—11 entries.
First premium, R. M Hoe, Morrissana, N Y . . 15 00
Second premium, J M. Gillett, Spencer, Ill 10 00

Best Sow, under 6 months old—15 entries:
First premium, R. M. Hoe, Morrissana, N Y . 10 00
Second premium, Edward Fries, Sherrells Mount, Iowa 5 00

Best Sow, with litter of her own Sucking Pigs, not less than 5, under 3 months--4 entries.
First premium, S H & A E Joiner, Janesville Wis . 20 00
Second premium, Geo Stephenson, Darlington, Wis . 10 00

Awarding Committee--G. Vought, Taylorville; A. J Niles, Ridott; Giles Turneaure, Freeport; J A. Aspinwall

LOT 55—SWEEPSTAKES—SUFFOLK, SMALL YORKSHIRE, SHORT-FACED LANCASHIRE, AND OTHER SMALL DISTINCT BREEDS.

Best Boar, of any age—15 entries,
Premium, R M Hoe, Morrissana, N Y $20 00

Best Sow, of any age:
Premium, Taylor & Bro., Waynesville 20 00

Awarding Committee—J M Epler, Virginia; R R. Stevenson, Virginia; C H Denison, Marion.

LOT 56—ESSEX

Best Boar, 2 years old or over—3 entries:
First premium, J A Patten, Hennepin $20 00
Second premium, W C Vandercook, Cherry Valley 10 00

Best Boar, 1 and under 2 years- 4 entries:
First premium, Taylor Bros , Waynesville 20 00
Second premium, Thos Judd, Wenona . . . 10 00

Best Boar, 6 months and under 1 year 4 entries:
First premium, Edward Fries, Sherrells Mount, Iowa 15 00
Second premium, J. A Patten, Hennepin . .. 10 00

Best Boar under 6 months old—10 entries.
First premium, J. A Patten, Hennepin 10 00
Second premium, Thos. Judd, Wenona. 5 00

Best Sow, 2 years old or over—4 entries·
First premium, J A Patten, Hennepin. $20 00
Second premium, Thos Judd, Wenona 10 00

Best Sow, 1 and under 2 years—3 entries:
First premium, J. A Patten, Hennepin 20 00
Second premium, Thos. Judd, Wenona 10 00

Best Sow, 6 months old and under 1 year—5 entries.
First premium, J A. Patten, Hennepin 15 00
Second premium, Edward Fries, Sherrells Mount, Iowa 10 00

Best Sow, under 6 months—7 entries.
First premium, J A Patten, Hennepin . . . 10 00
Second premium, J A Patten, Hennepin . . . 5 00

Best Sow, with litter of her own Sucking Pigs, not less than 5, under 3 months—2 entries.
First premium, Thos Judd, Wenona 20 00
Second premium, W C Vandercock, Cherry Valley . 10 00

Awarding Committee--E V. Raley, Granville, L M Case, Winslow; J. B Barnes; Ottawa

LOT 57 - SWEEPSTAKES--ESSEX.

Best Boar, of any age—8 entries.
Premium, J A Patten, Hennepin . . $26 09

Best Sow, of any age—8 entries:
Premium, Taylor & Bros., Waynesville . . 20 00

Awarding Committee—John Gosling, Rockford; J A Dufield, Woodstock; E R. Moody, Eminence, Ky.

LOT 58—BREEDER'S RING

OPEN TO ALL BREEDS

Best Pen of Breeding Hogs, to consist of 1 Boar and 4 Sows of any age and same breed, owned by the exhibitor—26 entries.
First premium, B J Orton, Cambridge $40 00
Second premium, E R Moody, Eminence, Ky . 20 00
Third premium, Hewer Bros , Belvidere . 10 00

Awarding Committee—M E Newbern, Hennepin, G N Dunlap, Bloomington; A N, Phelps, Wataga; L. J. Halsted, Long Point; D E Jacobs, Galva

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CLASS E—POULTRY.

H D EMERY, *Superintendent*

LOT 59—ASIATIC.

Best Light Brahma Fowl, male—6 entries.
First premium, Stone & Hunter, Bloomington $3 00
Second premium, J H Leaton, Bloomington . Cert

Best Light Brahma, female—8 entries.
First premium, Stone & Hunter, Bloomington . . 3 00
Second premium, J H Leaton, Bloomington . . . Cert

Best Light Brahma Chick, male—6 entries.
First premium, Stone & Hunter, Bloomington 2 00
Second premium, J H Leaton, Bloomington ... ... Cert.

Best Light Brahma Chick, female—9 entries:
First premium, Stone & Hunter, Bloomington 3 00
Second premium, P. A. Bartlett, Jacksonville . . . . . Cert.

Best Dark Brahma Fowl, male—3 entries:
First premium, J. H. Leaton, Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield . . Cert

Best Dark Brahma Fowl, female—4 entries:
First premium, J. H Leaton, Bloomington 3 00
Second premium, H. Ringhouse, Bloomington . . . . . Cert.

Best Dark Brahma Chick, male—3 entries:
First premium, H. Ringhouse Bloomington 2 00
Second premium, J H Long, Aurora . . . . Cert.

Best Dark Brahma Chick, female—3 entries:
First premium, J. H. Long, Aurora 2 00
Second premium, H Ringhouse, Bloomington . . Cert

Best Cochin Fowl, male—5 entries:
First premium, J. H Leaton, Bloomington . 3 00
Second premium, Bartholomew & Edwards, Rosefield Cert

Best Buff Cochin Fowl, female—5 entries:
First premium, J H Leaton, Bloomington . . . 3 00
Second premium, Bartholomew & Edwards, Rosefield . Cert

Best Buff Cochin Chick, male—11 entries.
First premium, P. A Bartlett, Jacksonville . . . 2 00
Second premium, Stone & Hunter, Bloomington . Cert

Best Buff Cochin Chick, female—12 entries:
First premium, Stone & Hunter, Bloomington . . . 2 00
Second premium, P S Beebe, Freeport . Cert

Best Partridge Cochin Fowl, male—8 entries:
First premium, J. H Leaton, Bloomington 3 00
Second premium, Frink & Patrick, Bloomington Cert

Best Partridge Cochin Fowl, female—8 entries.
First premium, D. H Waterbury, Polo .. 3 00
Second premium, E. Denny, Aurora . . Cert

Best Partridge Cochin Chick, male—6 entries:
First premium, Frink & Patrick, Bloomington . 2 00
Second premium, P. A. Bartlett, Jacksonville Cert

Best Partridge Cochin Chick, female—6 entries:
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Frink & Patrick, Bloomington Cert

Best White Cochin Fowl, male—3 entries:
First premium, Wise & Deener, Freeport 3 00
Second premium, J. H Leaton, Bloomington . . Cert

Best White Cochin Fowl, female—3 entries:
First premium, J. H Leaton, Bloomington 3 00
Second premium, Wise & Deener, Freeport . . Cert

Best White Cochin Chick, male—5 entries.
First premium, P A. Bartlett, Jacksonville 2 00
Second premium, E. C Allen, Aurora .... . . Cert

Best White Cochin Chick, female—4 entries:
First premium, P. A. Bartlett, Jacksonville 2 00
Second premium, E. C Allen, Aurora.... . . . . Cert.

Best Black Cochin Fowl, male—5 entries.
First premium, Stone & Hunter, Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield . . . . . Cert.

Best Black Cochin Fowl female—3 entries:
First premium, J. F Harroll, Aurora 3 00
Second premium, Stone & Hunter, Bloomington . . . . . Cert.

Best Black Cochin Chick, male—4 entries:
First premium, Stone & Hunter, Bloomington 2 00
Second Premium, J. F Harroll, Aurora .. . . . . Cert

Best Black Cochin Chick, female—5 entries:
First premium, Stone & Hunter, Bloomington.... . . . . 2 00
Second premium, J. F Harroll, Aurora . . . . . Cert

Awarding Committee—W. H. Turneaure, Clinton, Wis.; James Yount, Freeport.

LOT 60--DORKING, DOMINIQUE, PLYMOUTH ROCK.

Best Silver Gray Fowl, male—2 entries:
First premium, P. A. Bartlett, Jacksonville $3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert

Best Silver Gray Fowl, female--2 entries:
First premium, P. A Bartlett, Jacksonville..... 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert

Best Silver Gray Chick, male-1 entry.
Premium, A. M Brown, Aurora 2 00

Best Silver Gray Chick, female—1 entry:
Premium, A. M. Brown, Aurora 2 00

Best Colored Fowl, male—1 entry:
Premium, Bartholomew & Edwards, Rosefield 3 00

Best Colored Fowl, female—1 entry:
Premium, Bartholomew & Edwards, Rosefield 3 00

Best American Dominique Fowl, male:
Premium, J H Leaton, Bloomington 3 00

Best American Dominique Fowl, female—2 entries:
First premium, J H Leaton, Bloomington 3 00
Second premium, Wise & Denny, Freeport ..... Cert

Best American Dominique Chick, male--2 entries:
First premium, J H Leaton, Bloomington 2 00
Second premium, Wise & Denny, Freeport ..... Cert

Best American Dominique Chick, female--2 entries.
First premium, Wise & Denny, Freeport 2 00
Second premium, J H Leaton Bloomington ..... Cert.

Best Plymouth Rock Fowl, male--4 entries
First premium, Stone & Hunter, Bloomington 3 00
Second premium, W A Thomas, Sterling ..... Cert

Best Plymouth Rock Fowl, female--5 entries:
First premium, Stone & Hunter, Bloomington 3 00
Second premium, J Brown Taylor, Freeport ..... Cert

Best Plymouth Rock Chick, male--13 entries:
First premium Stone & Hunter, Bloomington 2 00
Second premium, James E White, Englewood ..... Cert

Best Plymouth Rock Chick, female--16 entries:
First premium, Stone & Hunter, Bloomington 2 00
Second premium, J Brown Taylor, Freeport ..... Cert

Awarding Committee--G V Frink, Bloomington; A M Brown, Aurora; Jas Yount, Freeport

LOT 61--SPANISH FOWL

Best Black Spanish White-face Fowl, male--3 entries.
First premium, Bartholomew & Edwards, Rosefield $3 00
Second premium, A M Brown, Aurora ..... Cert.

Best Black Spanish White-face Fowl, female--3 entries:
First premium, Bartholomew & Edwards, Rosefield 3 00
Second premium, A M Brown, Aurora ..... Cert

Best Black Spanish Chick, male--3 entries.
First premium, A M Brown, Aurora 2 00
Second premium, A M Brown, Aurora ..... Cert

Best Black Spanish Chick, female--3 entries:
First premium, A M Brown, Aurora 2 00
Second premium, A M Brown, Aurora. ..... Cert

Best White Leghorn Fowl, male--3 entries:
First premium, N A Thomas, Sterling 3 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best White Leghorn Fowl, female--3 entries:
First premium, Stone & Hunter, Bloomington 3 00
Second premium, N A Thomas, Sterling ..... Cert.

Best White Leghorn Chick, male--6 entries:
First premium, Stone & Hunter, Bloomington 2 00
Second premium, Wise & Denny, Freeport ..... Cert.

Best White Leghorn Chick, female--6 entries.
First premium, P A. Bartlett, Jacksonville 2 00
Second premium, Stone & Hunter. Bloomington ..... Cert.

Best Brown Leghorn Fowl, male--1 entry:
First premium, Stone & Hunter, Bloomington 3 00

Best Brown Leghorn Fowl, female--1 entry.
First premium, Stone & Hunter, Bloomington 3 00

Best Brown Leghorn Chick, male -2 entries.
First premium, P A. Bartlett, Jacksonville 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best Brown Leghorn Chick, female--2 entries:
First premium, P A Bartlett, Jacksonville 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best Dominique Leghorn Fowl, male--1 entry.
First premium, Bartholomew & Edwards, Rosefield 3 00

Best Dominique Leghorn Fowl, female--1 entry.
First premium, Bartholomew & Edwards, Rosefield 3 00

Best Black Leghorn Chick, male--1 entry.
First premium, Bartholomew & Edwards, Rosefield 2 00

Best Black Leghorn Chick female--1 entry
First premium, Bartholomew & Edwards, Rosefield 2 00

Awarding Committee--N A Thomas, Sterling; N Hall, Bloomington; P. Cudmore, Chicago; B Gamel, Chicago

LOT 62--HAMBURGS

Best Golden Penciled Fowl, male--2 entries·
First premium, N A Thomas, Sterling $3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert.

Best Golden Penciled Fowl, female--2 entries:
First premium, N A Thomas, Sterling 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert.

Best Golden Penciled Chick, male--1 entry·
First premium, N A Thomas, Sterling 2 00

Best Golden Penciled Chick, female--1 entry
First premium, N A Thomas, Sterling 2 00

Best Silver Penciled Fowl, male--1 entry:
First premium, J W. Prouty, Beloit, Wis 3 00

Best Silver Penciled Fowl, female--2 entries:
First premium, Bartholomew & Edwards, Rosefield 3 00
Second premium, J W Prouty, Beloit, Wis ..... Cert.

Best Silver Penciled Chick, male--1 entry.
First premium, J W Prouty, Beloit, Wis 2 00

Best Silver Penciled Chick, female--1 entry·
First premium, J. W Prouty, Beloit, Wis 2 90

Best Golden Spangled Fowl, male--3 entries:
First premium, Bartholomew & Edwards, Rosefield 3 00
Second premium, E Munn, Freeport ..... Cert.

Best Golden Spangled Fowl, female--2 entries.
First premium, E Munn Freeport 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert

Best Silver Spangled Fowl, male--3 entries.
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert

Best Silver Spangled Fowl, female--3 entries:
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Frink & Patrick, Bloomington ..... Cert.

Best Silver Spangled Chick, male--3 entries:
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Frink & Patrick, Bloomington ... . .. Cert

Best Silver Spangled Chick, female--3 entries:
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Frink & Patrick, Bloomington . . Cert

Best Black Fowl, male--2 entries·
First premium, A A Nelle, Aurora . . 3 00
Second premium, Bartholomew & Edwards, Rosefield . . . Cert

Best Black Fowl, female--2 entries.
First premium, A A. Nelle Aurora , .. 3 00
Second premium, Bartholomew & Edwards, Rosefield . Cert

Best Black Chick, male--2 entries:
First premium, A A Nelle, Aurora . 2 00
Second premium, A A Nelle, Aurora . Cert

Best Black Chick, female--2 entries.
First premium, A A Nelle, Aurora . . 2 00
Second premium, A A. Nelle, Aurora . . Cert

Awarding Committee- Wm M. Swentzel, Freeport; C P Hunter, Bloomington

LOT 63--POLISH

Best Golden Spangled Fowl, male—2 entries.
First premium, Bartholomew & Edwards, Rosefield $3 00
Second premium, E Munn Freeport . . . Cert

Best Golden Spangled Fowl, female--2 entries.
First premium, Bartholemew & Edwards, Rosefield 3 00
Second premium, E Munn, Freeport . .. . Cert

Best Golden Spangled Chick, male--1 entry
Premium, N A Thomas Sterling 2 00

Best Golden Spangled Chick, female--1 entry
Premium, N A Thomas, Sterling 2 00

Best Silver Spangled Fowl male--2 entries
First premium, Bartholomew & Edwards, Rosefield . .. 3 00
Second premium, P A Bartlett, Jacksonville . Cert

Best Silver Spangled Fowl, female--2 entries:
First premium, Bartholomew & Edwards, Rosefield .. 3 00
Second premium, P A Bartlett, Jacksonville Cert

Best White-crested Black Fowl, male--2 entries
Premium, Frink & Patrick Bloomington 3 00

Best White-crested Black Fowl, female--3 entries
First premium Frink & Patrick, Bloomington . 3 00
Second premium, Wm Pooley, Aurora Cert

Best White-Crested Black Chick, male—4 entries.
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Wm Paoley, Aurora Cert

Best White-crested Black Chick, female—4 entries
First premium, J H Leaton, Bloomington 2 00
Second premium, Frink & Patrick, Bloomington . Cert

Best White Fowl, male—3 entries
First premium, Bartholomew & Edwards, Rosefield . 3 00
Second premium, P A Bartlett, Jacksonville .. .. Cert

Best White Fowl, female—3 entries·
First premium, Bartholomew & Edwards, Rosefield . 3 00
Second premium, P A. Bartlett Jacksonville Cert

Best White Chick, male- 2 entries
First premium, P A Bartlett, Jacksonville . 2 00
Second premium, W H Watson, Aurora . . Cert

Best White Chick, female—2 entries:
First premium W H Watson, Aurora .. 2 00
Second premium, P A Bartlett, Jacksonville . Cert

Awarding Committee James Yount, Freeport; George Frost, Apple River; C. T Hunter, Bloomington

LOT 64 -FRENCH.

Best Houdan Fowl, male—3 entries·
First premium, N A Thomas, Sterling $3 00
Second premium Bartholomew & Edwards, Rosefield . . Cert

Best Houdan Fowl, female—4 entries
First premium Bartholomew & Edwards, Rosefield . . 3 00
Second premium, N. A Thomas, Sterling . Cert

Best La Fleche Fowl, male—1 entry.
Premium, Bartholomew & Edwards Rosefield 3 00

Best La Fleche Fowl, female—1 entry
Premium, Bartholomew & Edwards, Rosefield 3 00

Awarding Committee—P A Bartlett, Jacksonville, C P Hunter, Bloomington

LOT 65—GAME

Best Black-breasted Red Fowl male—5 entries
First premium, Stone & Hunter, Bloomington . 3 00
Second premium, Bartholomew & Edwards, Rosefield . Cert

Best Black-breasted Red Fowl, female—6 entries
First premium, Stone & Hunter, Bloomington 3 00
Second premium, Bartholomew & Edwards Rosefield Cert

Best Black-breasted Red Chick male—3 entries
First premium, Stone & Hunter, Bloomington 2 00
Second premium P A Bartlett, Jacksonville Cert

Best Black-breasted Red Chick, female—5 entries
First premium, Stone & Hunter Bloomington 2 00
Second premium, P A Bartlett, Jacksonville Cert

Best Brown Red Fowl male—3 entries
First Premium, Stone & Hunter Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield Cert

Best Brown Red Fowl, female 2 entries
First premium Stone & Hunter Bloomington 3 00
Second premium Bartholomew & Edwards Rosefield Cert

Best Brown Red Chick male—1 entry
Premium, Stone & Hunter, Bloomington 2 00

Best Brown Red Chick, female—1 entry
Premium, Stone & Hunter Bloomington 2 00

Best Ginger Red Fowl, male—1 entry
Premium Bartholomew & Edwards, Rosefield 3 00

Best Ginger Red Fowl, female—1 entry
Premium, Bartholomew & Edwards, Rosefield 3 00

Best Yellow Duck Wing Fowl, male—1 entry
Premium, Stone & Hunter, Bloomington 3 00

Best Yellow Duck Wing Fowl, female—1 entry
Premium, Stone & Hunter, Bloomington 3

Best Yellow Duck Wing Chick, male—1 entry
Premium, Stone & Hunter, Bloomington 00

Best Yellow Duck Wing Chick, female—1 entry
Premium, Stone & Hunter, Bloomington 2 00

Best Gray Fowl, male—1 entry
Premium, James Yount, Freeport 3 00

Best Gray Fowl, female—1 entry
Premium, James Yount, Freeport 3 00

Best Gray Chick, male—1 entry,
Premium, James Yount, Freeport 2 00

Best Gray Chick, female—1 entry
Premium, James Yount, Freeport 2 00

Best Silver Duck Wing Fowl, male-2 entries:
First premium, Stone & Hunter Bloomington 3 00
Second premium. E. E. Sheets, Freeport..... Cert.

Best Silver Duck Wing Fowl, female—3 entries:
First premium, E. E. Sheets, Freeport 3 00
Second premium, E. E. Sheets, Freeport ..... Cert.

Best Silver Duck Wing Chick, female—1 entry:
Premium, E. E. Sheets, Freeport 2 00

Best Spangled Fowl, female—1 entry:
Premium, Stone & Hunter, Bloomington 3 00

Best Spangled Chick, female—1 entry:
Premium, Stone & Hunter, Bloomington 2 00

Best Pile Fowl, male—3 entries:
First premium, Stone & Hunter, Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert.

Best Pile Fowl, female—4 entries:
First premium, Stone & Hunter, Bloomington 3 00
Second premium, Bartholomew & Edwards, Rosefield ..... Cert

Best Pile Chick, male—4 entries.
First premium, Stone & Hunter Bloomington 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best Pile Chick, female—3 entries:
First premium, Stone & Hunter, Bloomington 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best White Pile Fowl, male 1 entry:
Premium, Bartholomew & Edwards, Rosefield 3 00

Best White Pile Fowl, female 1 entry.
Premium, Bartholomew & Edwards, Rosefield 3 00

Best White Pile Chick, male--1 entry;
Premium, Bartholomew & Edwards, Rosefield 2 00

Best Black Fowl, male—2 entries
First premium, James Yount, Freeport 3 00
Second premium, L Metzger, Freeport ..... Cert.

Best Black Fowl, female--1 entry.
Premium, Jas Yount, Freeport 3 00

Best Black Chick, male—1 entry:
Premium, L. Metzger, Freeport 2 00

Best Black Chick, female--2 entries:
First premium, L Metzger, Freeport. 2 00
Second premium, L. Metzger, Freeport ..... Cert.

Best Blue Chick, male—1 entry
Premium, James Yount, Freeport 2 00

Best Blue Chick, female—1 entry·
Premium, James Yount, Freeport 2 00

Awarding Committee—G V Frink, Bloomington; W M Swentzell, Freeport

LOT 66—BANTAMS.

Best Sebright Fowl. male—4 entries:
First premium, J H. Leaton, Bloomington $3 00
Second premium, D H Waterbury, Polo ..... Cert

Best Sebright Fowl, female—2 entries:
First premium, James Yount, Freeport 3 00
Second premium. J H Leaton, Bloomington ..... Cert.

Best Red Pile Game Fowl, male—3 entries:
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Frink & Patrick, Bloomington ..... Cert

Best Red Pile Game Fowl female--6 entries:
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Frink & Patrick, Bloomington ..... Cert

Best Red Pile Game Chick, male—4 entries:
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best Red Pile Game Chick, female—4 entries:
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Stone & Hunter, Bloomington ..... Cert.

Best White Fowl, male—3 entries:
Premium, P. A Bartlett, Jacksonville 3 00

Best White Fowl, female—3 entries:
Premium, P A Bartlett, Jacksonville 3 00

Best Black Fowl, male—2 entries:
First premium, Eb Denney, Aurora 3 00
Second premium, Eb. Denney, Aurora ..... Cert

Best Black Fowl, female 2 entries.
First premium Eb. Denney, Aurora 3 00
Second premium Eb Denney, Aurora ..... Cert

Best Black Chick, male—2 entries
First premium, Eb Denney, Aurora 2 00
Second premium, Eb Denney, Aurora ..... Cert.

Best Black Chick, female—2 entries:
First premium, Eb Denney, Aurora 2 00
Second premium, Eb Denney, Aurora ..... Cert

Best Black Red Game Fowl, male—6 entries
First premium, Frink & Patrick, Bloomington, ... 3 00
Second premium, Frink & Patrick, Bloomington ..... Cert

Best Black Red Game Fowl, female—6 entries:
First premium, Frink & Patrick, Bloomington 3 00
Second premium, Frink & Patrick, Bloomington ..... Cert

Best Black Red Game Chick, male—5 entries
First premium, Frink & Patrick, Bloomington 2 00
Second premium, Frink & Patrick, Bloomington ..... Cert

Best Black Red Game Chick, female 4 entries
First premium, Frink & Patrick, Bloomington. 2 00
Second premium Frink & Patrick, Bloomington ..... Cert

Best Brown Breasted Game Fowl, male—1 entry
Premium, Stone & Hunter, Bloomington 3 00

Best Brown Breasted Game Chick, male - 1 entry.
Premium, Stone & Hunter, Bloomington 2 00

Best Brown Breasted Game Chick, female 1 entry
Premium Stone & Hunter, Bloomington 2 00

Best Duck Wing Fowl, male 5 entries
First premium, Wise & Deaner, Freeport 3 00
Second premium, Stone & Hunter, Bloomington ..... Cert

Best Duck Wing Fowl, female 2 entries.
First premium, James Yount, Freeport 3 00
Second premium, Wise & Deaner, Freeport ..... Cert

Best Duck Wing Chick, male—1 entry:
Premium, Stone & Hunter, Bloomington 2 00

Best Duck Wing Chick, female- 2 entries:
First premium, Stone & Hunter, Bloomington 2 00
Second premium, James Yount, Freeport ..... Cert.

Awarding Committee George Frost, Apple River; James Yount, Freeport; C P. Hunter, Bloomington

LOT 69—MISCELLANEOUS

Best Silkies Fowls—1 entry:
First premium, D H Waterbury, Pola 3 00

Best Pea Fowls -1 entry.
First premium, E Munn, Freeport 3 00

Best Ferrets—2 entries:
First premium, W A. Pratt, Elgin 3 00
Second premium, W A Pratt, Elgin 2 00

Awarding Committee—F. K Bartholomew, Elmwood; P A. Bartlett, Jacksonville.

LOT 69—TURKEYS.

Best Bronze Fowls--3 entries:
First premium, Bartholomew & Edwards, Rosefield 4 00
Second premium, P. A Bartlett, Jacksonville..... 2 00

Best Black Fowls--1 entry:
First premium, P. A. Bartlett, Jacksonville 4 00

Best Black Chick--1 entry:
First premium, H. Waterbury, Polo 2 00

Best Buff Fowls--2 entries:
First premium, Bartholomew & Edwards, Rosefield 4 00
Second premium, E Munn, Freeport..... 2 00

Awarding Committee--C. P. Hunter, Bloomington; George Frost, Apple River

LOT 70--DUCKS.

Best Aylesbury--5 entries:
First premium, Wise & Deaner, Freeport $3 00
Second premium, Wise & Deaner, Freeport 2 00

Best Rouen--3 entries.
First premium, H Ringhouse, Bloomington 3 00
Second premium, P A. Bartlett, Jacksonville 2 00

Best Cayuga--2 entries.
First premium, P. A Bartlett, Jacksonville 3 00
Second premium, Bartholomew & Edwards, Rosefield 2 00

Best Colored Muscovy--3 entries.
First premium, Bartholomew & Edwards, Rosefield 3 00
Second premium, Bartholomew & Edwards, Rosefield 2 00

Best White-crested--2 entries
First premium, Bartholomew & Edwards, Rosefield 3 00
Second premium, P A Bartlett, Jacksonville 2 00

Best Pekin--8 entries
First premium, P A Bartlett, Jacksonville 3 00
Second premium H Ringhouse, Bloomington 2 00

Best Call--2 entries
First premium, P A Bartlett, Jacksonville 3 00
Second premium, Bartholomew & Edwards, Rosefield 2 00

Awarding Committee--N A Thomas, Sterling. N Hall, Bloomington, P Cudmore, Chicago

LOT 71- GEESE

Best Embden--2 entries.
First premium, Bartholomew & Edwards. Rosefield $1 00
Second premium, D H Waterbury, Polo 2 00

Best Toulouse--1 entry
First premium, Bartholomew & Edwards, Rosefield 4 00

Best White China--4 entries
First premium, P A Bartlett, Jacksonville 4 00
Second premium, Bartholomew & Edwards, Rosefield 2 00
Best Egyptian, or Nile--1 entry.
First premium, Bartholomew & Edwards, Rosefield 4 00

Best African 2 entries
First premium, Bartholomew & Edwards, Rosefield 4 00

Awarding Committee—N A Thomas, Sterling; N Hall, Bloomington, P. Cudmore, Chicago; B. Gunsel, Chicago

LOT 72—PIGEONS.

Best Pair of Pouters—4 entries.
First premium, H Ringhouse, Bloomington $2 00
Second premium, P A. Bartlett, Jacksonville 1 00

LOT 78--MANUFACTURES OF VARIOUS KINDS.

Best Display of Pottery Ware, of various kinds:
Premium, J. A. Niedermeyer, Freeport.. . . . . Silver medal

Best Display of Coopers' Work:
Premium, George Rustin, Freeport . . . . . Silver medal

Best Carriage Harness:
Premium, Freiday & Molter, Freeport . . . . . Diploma and $10 00

Best Single Buggy Harness:
Premium, Freiday & Molter, Freeport . . . . . 1 Diploma and 5 00

Best Display of Fancy Soaps:
Premium, A P Hoffman, Mendota . . . . Silver medal

Best Display of Bar Soaps:
Premium, A, P Hoffman, Mendota . . . . . Silver medal

Awarding Committee--J Gillespie, Edwardsville, Edwin Waite, Sycamore; J H Snyder, Freeport

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CLASS F—MECHANIC ARTS.

SECTION 2

W M SMITH, *Superintendent.*

LOT 80- ENGINES, MACHINERY, ETC

Best Portable Farm Steam Engine
Premium, W G & W Barnes, Freeport . Diploma

Best Pump for Well:
Premium, H Woodmansee, Freeport . . . . . Silver Medal

Best Pump for Cistern:
Premium, Jones, Woodruff & Co , Rockford .. . . Silver Medal

Best Portable Grist Mill for Farm Use
Premium, Challenge Mill Co , Batavia . .Diploma

Best Machine for Making Drain Tile:
Premium, H Brewer & Co , Tecumseh, Mich . . Diploma and $20 00

Best Machine for Making Brick
Premium, Adrian Brick and Tile Machine Co , Adrian, Mich Diploma

Best Portable Mill for Shelling and Grinding Corn.
Premium, Challenge Mill Co , Batavia .. Silver Medal.

Best Horse Hay Fork:
Premium, W G & W Barnes, Freeport . . . Silver Medal.

Best Horse Hay Derrick for Stacking
Premium, J E Porter, Ottawa . .. . Silver Medal.

Best Hay Elevator and Carrier for Moving Hay in Barn:
Premium, W G & W Barnes, Freeport .. . . . Silver Medal.

Best Portable Hay Press:
Premium, P K Dedrick & Co , Albany, N Y . . . . Diploma.

Best Clover Huller and Thresher:
Premium, W G & W Barnes, Freeport . . .. . Silver Medal

Best Hay and Straw Cutter:
Premium, Whitman Agricultural Co., St. Louis, Mo.... .. Silver Medal

Best Mower-knife Grinder:
Premium, Ingraham, Dayton & Kasson, Chicago .. . . Silver Medal.

Awarding Committee--Geo Wells, Quincy; M H Moorehouse, Centralia; W. B Ru h, Decatur.

LOT 81—IMPLEMENTS, VEHICLES, ETC

Best Steaming Apparatus for Cooking Food for Stock
Premium, Haxturn Steam Heating Co , Kewanee . Diploma and $10 00

Best Iron Fence and Gate:
Premium John Shafer, Colo, Iowa . . . . Silver Medal.

Best Gate for Farm Use:
Premium, J R Talley, Piasa . . .. .Silver Medal.

Best Hay and Cattle Scales for Farm Use:
Premium, G R Lester, Freeport . . . . . Diploma and $10 00

Best Display of Buggies:
Premium, T L J Klapp, Freeport .. . . Diploma and $10 00

Best Two-horse Carriage:
Premium, T. L J. Klapp, Freeport . . .. Silver Medal.

Best Top Buggy:
Premium, John W Brown, Polo . . . Silver Medal

Best Open Buggy.
Premium, J W Henney & Co., Freeport ... . Silver Medal

Best Two-horse Wagon:
Premium, Peter Schuttler, Chicago . . .. Diploma and $10 00

Best Spring Wagon:
Premium. Courtland Wagon Co Courtland, N Y . Diploma and $5.

Awarding Committee--M Conrad, Chicago; C. A Mason, Moline; Henry A Judd, Aurora.

CLASS G—FARM PRODUCTS.

JONATHAN PERIAM, *Superintendent*

LOT 83--GRAINS AND SEEDS

Best Sample White Winter Wheat:
First premium, Samuel Bechtold, Freeport . $10 00
Second premium, J T. Whelple, Cobden . . 5 00

Best Sample Red Winter Wheat
First premium, J T Whelple, Cobden . 10 00
Second premium, T A. Imlay, Ridott .. . 5 00

Best Sample Red Spring Wheat:
First premium, U. S. Hollister, St. Paul, Minn 10 00
Second premium, E H. Smith & Co , Dubuque, Iowa . . 5 00

Best Sample Rye:
First premium, E. H Smith & Co , Dubuque, Iowa 5 00
Second premium J Y Haughey, Shannon 3 00

Best Sample Oats:
First premium, Robert Eddie, Pecatonica..... 5 00
Second premium, E H. Smith & Co., Dubuque, Iowa..... 3 00

Best Sample Fall Barley:
First premium, E. H. Smith & Co., Dubuque, Iowa 5 00

Best Sample Spring Barley:
First premium, E. H. Smith & Co , Dubuque, Iowa 5 00
Second premium, Geo. Haskell & Co., Rockford 3 00

Best Sample White Indian Corn:
First premium, T Ingal, Freeport 5 00
Second premium, John Pope, Freeport, ... 3 00

Best Sample Yellow Indian Corn:
First premium, M. D, Mulnix, Freeport 5 00
Second premium, E. H. Smith & Co., Dubuque, Iowa 3 00

Best Sample Corn on Stalk:
First premium, John Pope, Freeport 2 00
Second premium, John Smallwood, Freeport 1 00

Best Sample Pop Corn.
First premium, Geo Haskell & Co , Rockford 2 00
Second premium, J Y Haughey, Shannon 2 00

Best sample of Buckwheat:
First premium, F M. Rodgers, Howardsville 5 00
Second Premium, T A Imlay, Ridott 2 00

Best sample of Timothy Seed.
First premium, Geo Haskell & Co , Rockford 5 00
Second premium, E H. Smith & Co , Dubuque, Iowa 2 00

Best sample of Clover Seed.
First premium, T. Ingal, Freeport 5 00
Second premium, E H Smith & Co , Dubuque, Iowa 2 00

Best sample of Blue Grass Seed.
First premium, E H Smith & Co , Dubuque, Iowa 5 00
Second premium, Geo Haskell & Co , Rockford 2 00

Best sample of Orchard Grass Seed:
First premium, Geo Haskell & Co , Rockford 5 00
Second premium, E H Smith & Co , Dubuque, Iowa 2 00

Best sample of White Field Beans.
First premium, E H Smith & Co , Dubuque, Iowa 5 00
Second premium, Geo Haskell & Co , Rockford 2 00

Best sample of Lima Beans:
First premium, E H Smith & Co . Dubuque, Iowa 4 00

Greatest Variety Garden Peas:
Premium, Geo Haskell & Co , Rockford 2 00

Best sample of Castor Beans.
First premium, Geo Haskell & Co., Rockford 10 00

Largest and best Display of Grains and Seeds:
Premium, Louis Bauscher, Freeport 30 00

Awarding Committee--James T Johnson, Warsaw; Charles H Dalton Dalton; L W Sheldon, Union; W H. Harisen, Franklin Grove.

LOT 84--VEGETABLES

Best sample Early Irish Potatoes;
First premium, John Wilcox, Rockford $5 00
Second premium, Sargent & Dunlap, Bloomington 3 00

Best sample Late Irish Potatoes
First premium, M D Mulnix, Freeport..... 5 00
Second premium, J. Gochenour, Freeport..... 3 00

Best sample Sweet Potatoes:
First premium, J F Gurley, Muscatine, Iowa 5 00
Second premium, E. H Smith & Co , Dubuque, Iowa 2 00

Best lot of Onions:
First premium, E H Smith & Co , Dubuque, Iowa..... 4 00
Second premium, Geo. Haskell & Co., Rockford 2 00

Best lot of Table Turnips:
First premium, Wm. Dawson, Freeport 4 00
Second premium, E. H. Smith & Co., Dubuque, Iowa 2 00

Best Beets, for table use:
First premium, Geo. Haskell & Co., Rockford 4 00
Second premium, Mrs. H. Austin, Kent 2 00

Best Mangel Wurzels:
First premium, Geo. Haskell & Co., Rockford 4 00

Best Parsnips, for table use:
First premium, F. R. Bauch, Freeport 4 00
Second premium, Geo Haskell & Co, Rockford 2 00

Best lot of Cauliflower:
First premium, Geo Haskell & Co, Rockford 4 00
Second premium, F R. Bauch, Freeport 2 00

Best lot of Celery:
First premium, John Bauscher, Freeport 4 00
Second premium, Charles Boehme, Freeport 2 00

Best lot of Cabbage:
First premium, E H Smith & Co, Dubuque, Iowa 4 00
Second premium, T. A Imlay, Ridott 2 00

Best Tomatoes:
First premium, Charles Boehme Freeport 4 00
Second premium, Geo Haskell & Co, Rockford 2 00

Best lot of Pumpkins:
Premium, Z T Turner, Eleroy 2 00

Best Squashes:
Premium, Geo Haskell & Co, Rockford 5 00

Best lot of Watermelons:
First premium, Geo Haskell & Co, Rockford 5 00
Second premium, J F Gurley, Muscatine, Iowa 2 00

Best lot of Muskmelons:
First premium, J F Gurley, Muscatine, Iowa 5 00

Best sample of Carrots:
First premium, Geo Haskell & Co, Rockford 4 00

Best Egg Plant Fruit:
First premium, C H. Dalton, Dalton 4 00
Second premium E H Smith & Co, Dubuque, Iowa 2 00

Best bale of Hops:
Premium, Z T Turner, Eleroy 4 00

Best and Greatest Variety of Garden Seeds, named:
First premium, F R Bauch, Freeport 10 00
Second premium, Geo. Haskell & Co, Rockford 5 00

Best sample Tobacco.
First premium, Charles Boehme, Freeport 5 00
Second premium, F R Bauch, Freeport 3 00

Best sample of Sugar Beets:
First premium, John Swanzy, Ridott 4 00
Second premium, F R Bauch, Freeport 2 00

Best and Greatest Variety of Vegetables.
First premium, Geo Haskell & Co, Rockford 15 00

TO AGRICULTURAL BOARDS, ONLY

Best and Greatest Variety of Vegetables:
Premium, DuPage County Agricultural Board, Wheaton 15 00

Awarding Committee—N N. Jones, Normal; L. F Gaston, Normal; F. S Wrate, Belvidere; A Beck, Oregon

LOT 85—BUTTER, CHEESE, ETC.

Best Barrel of Winter Wheat Flour:
Premium, Fisher & Galt, Petersburg ..... Diploma.

Best Butter, in tub or firkin, not less than 25 lbs.:
First premium, A H Allen, Belvidere $10 00
Second premium, W S. Crowley, Jr., Grand de Tour 5 00

Best Butter, made in May or June, not less than 20 lbs.
First premium, F S Wrate, Belvidere 10 00
Second premium, R Hawkey, Cherry Valley 5 00

Best Fresh Butter, in roll, not less than 10 lbs .
First premium, R Hawkey, Cherry Valley 10 00

Best and largest Display of Butter:
Premium, John Smallwood, Freeport . . 25 00

Best and largest Display of Cheese.
Premium, Young & Henderson, Freeport . . 25 00

Best Cured Cheese, under 1 year old:
First premium, C H Harris, Freeport 10 00
Second premium, Young & Henderson, Freeport . . 5 00

Best New Cheese:
First premium, Young & Henderson, Freeport 10 00

Best lot of Honey, not less than 10 lbs
First premium, F B Hazlett, Freeport 5 00
Second premium, H W Lee, Pecatonica . . 3 00

Awarding Committee—John Swanzey, Ridott; R A Burnett, Chicago; Daniel Erikholt, Shannon; M W Walton, Ridott; M Laurer, Freeport

LOT 86—BREAD, CAKES, ETC

Best 2 Loaves Wheat Bread, made with hop yeast:
First premium, Mrs. R. M Milliken, Dakota .. . $6 00
Second premium, B. Shirey, Ridott 4 00

Best 2 Loaves of Wheat Bread made with milk rising:
First premium, Hattie Burbank, Freeport 6 00
Second premium, A S White, Rockford 4 00

Best 2 Loaves of Bread made of unbolted flour:
First premium, Mrs E A Ling, Freeport . 6 00
Second premium, Elise E Whitbecker, Freeport .. 4 00

Best 2 Loaves Rye Bread
First premium, Mrs Thomas Ewing, Freeport . 6 00
Second premium, Mrs E A Ling, Freeport 4 00

Best 2 Loaves of Corn Bread
First premium, A S White, Rockford 6 00
Second premium, Mrs Mary Maxwell, Reynoldsburg, Ohio. . . . 4 00

Best Sponge Cake.
First premium, Miss H J. Bierer, Rockford 4 00
Second premium, A A Pettibone, Warren .. 2 00

Best Snow Cake.
First premium, A. C Hayes, Freeport . . 4 00
Second premium, Miss H. J Bierer, Rockford . . . 2 00

Best Pound Cake:
First premium, Mrs E E Whitbecker, Freeport . 4 00
Second premium, Miss H J. Bierer, Rockford 2 00

Best Jelly Cake.
First premium, Annie A. Pope, Freeport .. . 4 00
Second premium A S White, Rockford 2 00

Best Fruit Cake.
First premium, Mrs. E. A. Ling, Freeport . 4 00
Second premium, Annie A Pope, Freeport . 2 00

Best Silver Cake.
First premium, Sallie J Johnston, Freeport 4 00
Second premium, Mrs. E E Whitbecker, Freeport 2 00

Best Gold Cake.
First premium, Annie A Pope, Freeport 4 00
Second premium, Mrs E E Whitbecker, Freeport 2 00

Best Nut Cake
First premium, Sallie J Johnston, Freeport 4 00
Second premium, Miss H J Bierer, Rockford 2 00

Best Doughnuts:
First premium, Mrs Wm Horton, Weston 4 00
Second premium, B T. Turner, Eleroy. 2 00

Best Ginger Cake:
First premium, A S White, Rockford 4 00
Second premium, Miss H. J Bierer, Rockford 2 00

Best Quart Sorghum Molasses
First premium, Mrs Mary Maxwell, Reynoldsburg, Ohio. 3 00

Best Pound Browned Coffee.
First premium, Mrs W R Buffington, Monmouth 1 00

Best Can Sweet Corn:
Premium, J Q. Detwiler 2 00

Best Can Common Corn
Premium, Mrs Wm Horton, Weston . . 2 00

Awarding Committee- Mrs M. W Walter, Ridott; Miss L L Swanzey, Ridott; Mrs Chas Waite, Lena; J. H Rogers, Dunlap; A S Gardiner, Rockford

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CLASS II—HORTICULTURE.

SECTION I

GEORGE S HASKELL, *Superintendent*

LOT 87—TREES

Best collection of cultivated, useful, hardy Evergreen Trees not less than 6 varieties, not less than 4 of each variety
First premium, L K Scofield, Freeport . . Diploma.
Second premium, L K Scofield, Freeport . . Silver Medal

FOR PROFESSIONAL FLORISTS AND DEALERS ONLY

Best collection of distinct varieties of Greenhouse and Hothouse Plants, not to include specimens entered for other premiums:
First premium F A Baller, Bloomington . Diploma & $40 00
Second premium, Oliver Bros., Davenport, Iowa 20 00
Third premium, Geo W Twiss, Rockford. 10 00

Best collection of Agaves and Aloes.
First premium, F A Baller, Bloomington 3 00
Second premium, H S. Hackman, Peru 2 00

Best collection of Cactus:
First premium, Mrs Jno C Westphal & Son, Davenport, Iowa 3 00
Second premium, F A Baller, Bloomington . . 2 00

Best collection of Achyranthus
First premium, Geo. W Twiss, Rockford 3 00
Second premium, Louis Bauscher, Freeport 2 00

Best collection of Begonias Foliage in variety.
First premium Louis Bauscher, Freeport . . 3 00
Second premium, Wm. Melcher, Rockford . . . 2 00

Best Collection of Single Geraniums, not less than 12 varieties:
First premium, H. S. Hackman, Peru 3 00
Second premium, F. A. Baller, Bloomington 2 00

Best Collection of Foliage Plants:
First premium, F A. Baller, Bloomington 3 00
Second premium, Geo. W Twiss, Rockford 2 00

Best Collection of Abutilons in bloom:
First premium, F. A. Baller: Bloomington 3 00
Second premium, Geo W Twiss, Rockford 2 00

Best Collection of Begonias, winter blooming:
First premium, Geo W Twiss, Rockford 3 00
Second premium, Jno. Bauscher, Freeport 2 00

Best Collection of Carnations, in bloom:
First premium, F. A. Baller, Bloomington 5 00
Second premium, Geo W Twiss, Rockford 3 00

Best Collection Double Fuchsias:
First premium, F. A. Baller, Bloomington 4 00
Second premium, F R Bauch, Freeport 3 00

Best Collection Single Fuchsias:
First premium, F M Baller, Bloomington 4 00
Second premium, John Bauscher, Freeport 3 00

Best Collection of Double Geraniums in Bloom, not less than 6 varieties:
First premium, H S. Hackman, Peru 3 00
Second premium, Geo. W. Twiss, Rockford 2 00

Best Collection of Lantanas in Bloom, not less than 6 varieties
First Premium, F A. Baller, Bloomington 2 00

Best 12 Roses in Pots, in bloom:
First premium, Geo W Twiss, Rockford 8 00
Second premium, F. A. Baller, Bloomington 4 00

Best Pair Hanging Baskets, of plants.
First premium, Oliver Bros , Davenport, Iowa 3 00
Second premium, H S Hackman, Peru 2 00

Best Single Hanging Basket, of plants.
First premium, Mrs. Jno Westphal & Son, Davenport, Iowa 2 00
Second premium, H S. Hackman, Peru. 1 00

Best Arranged Group of Plants, in bloom.
First premium, Wm. Melcher, Rockford 4 00
Second premium, Geo W Twiss, Rockford 3 00

Best Single Specimen Plant, of any kind.
Premium, F A Baller, Bloomington 4 00

Best Collection of Palms
Premium, Oliver Bros , Davenport, Iowa 10 00

Best Collection of Ferns:
Premium, Robt Little, Freeport 10 00

Best Collection of Climbing Plants:
Premium, F. A Baller, Bloomington 5 00

Best Collection of Collideums:
Premium, F A. Baller, Bloomington 3 00

Best Collection of Cannas:
Premium, H. S Hackman, Peru 3 00

Best Collection of Coleus:
Premium, John Bauscher, Freeport 3 00

Best Display of Bulbs, correctly named:
Premium, Geo W Twiss, Rockford 5 00

Awarding Committee—J W Cochran, Blue Island; James Crow, McHenry county; Mrs Oscar Taylor, Stephenson county

LOT 88 CUT FLOWERS.

FOR PROFESSIONAL FLORISTS

Best collection of Cut Flowers
First premium, E. Wyman, Jr., Rockford $6 00
Second premium, F A. Baller, Bloomington 4 00

Best collection of Antirrhinums:
First premium, E. Wyman, Jr., Rockford 3 00
Second premium, Mrs. Jno C Westphal & Son, Davenport, Iowa 2 00

Best collection of Asters:
First premium, E Wyman, Jr., Rockford 4 00
Second premium, Oliver Bros , Davenport, Iowa 3 00

Best collection of Dahlias, named:
First premium, F A Baller, Bloomington 5 00
Second premium, E Wyman, Jr., Rockford 3 00

Best collection of 18 Dahlias, dissimilar bloom.
First premium, E Wyman, Jr., Rockford 3 00
Second premium, F. M Baller, Bloomington 2 00

Best collection of Pompone, or Bouquet Dahlias:
First premium, Mrs Jno C Westphal & Son, Davenport, Iowa 3 00
Second premium, E. Wyman, Jr , Rockford 2 00

Best collection of Everlastings.
First premium, Geo E Haskell, Rockford 5 00
Second premium, E Wyman, Jr , Rockford 3 00

Best collection of Gladioli.
First premium, Mrs Jno C Westphal & Son, Davenport, Iowa 10 00
Second premium, E Wyman, Jr , Rockford 5 00

Best collection of Japan Pinks.
First premium, E Wyman, Jr , Rockford 4 00
Second premium, Mrs Jno C Westphal & Son, Davenport, Iowa 3 00

Best collection of Pansies.
First premium, Louis Bauscher, Freeport. 4 00
Second premium, F. R Bauch, Freeport 3 00

Best collection of Perennial Phlox
First premium, F M Baller, Bloomington 4 00
Second premium, E Wyman, Jr , Rockford 3 00

Best collection of Phlox Drummondii·
First premium, E. Wyman, Jr., Rockford 4 00
Second premium, Louis Bauscher 3 00

Best Collection of Roses, not less than 20 varieties·
First premium, F M. Baller, Bloomington 8 00

Best collection of Bourbon, Tea, Noisette and Bengals, not less than 12 varieties
First premium, Oliver Bros , Davenport, Iowa 4 00
Second premium, F M Baller, Bloomington 3 00

Best collection of Tuberoses·
First premium, Wm Melcher, Rockford 3 00
Second premium, Mrs John C Westphal & Son, Davenport, Iowa 2 00

Best collection of Ten Weeks Stock:
First premium, E Wyman, jr., Rockford 3 00
Second premium, Mrs John C Westphal & Son, Davenport, Iowa 2 00

Best collection Verbenas
First premium, E Wyman, Jr , Rockford 5 00
Second premium, F M Baller, Bloomington 2 00

Best collection Double Zinnia
First premium, E Wyman, Jr., Rockford 4 00
Second premium, Louis Bauscher, Freeport 3 00

Best collection of Double Petunia.
First premium, E Wyman, Jr , Rockford 4 00
Second premium, F M Baller, Bloomington 3 00

Best collection Single Petunia:
First premium, E Wyman, Jr , Rockford 4 00
Second premium, Oliver Bros , Davenport, Iowa 3 00

Largest and best collection of Cut Flowers, including above.
Premium, E Wyman, Jr , Rockford ..... Diploma.

FLORAL DESIGNS, BOUQUETS, ETC.

Best Floral Design:
First premium, Geo. W. Twiss, Rockford $20 00
Second premium, William Melcher, Rockford 10 00

Best Design of Dahlias:
Second premium, Oliver Bros., Davenport, Iowa 3 00

Best Floral Wreath:
Premium, H S Hackman, Perp 3 00

Best Design of Cut Flowers:
Premium, Geo. W. Twiss, Rockford 4 00

Best Pair Flat Hand Bouquets:
Premium, Geo W. Twiss, Rockford 3 00

Best Pair Round Hand Bouquets:
Premium, Wm. A Nourse, Moline 3 00

Best Basket of Cut Flowers:
Premium, Wm. A Nourse, Moline 3 00

Best Basket of Winter Flowers:
Premium, Geo E Haskell, Rockford 3 00

Best Bouquet of Winter Flowers
Premium, Geo E Haskell, Rockford 3 00

Best Pair Bridal Bouquets
Premium, Geo. W Twiss, Rockford 3 00

Awarding Committee—James Crow, Chamois; Mrs Oscar Taylor, Stephenson county; W. Cochran, Blue Island.

LOT 89 - FLOWERS AND PLANTS.

By amateurs—No Professional Florist allowed to compete

Best collection of Greenhouse, Hothouse and Bedding Plants in pots
Second premium, Mrs Charles Boehme, Freeport $8 00

Best collection Double Petunias in bloom:
First premium, W M Kimball, Rockford 3 00
Second premium, W. A Burdick, Rockford 2 00

Best collection Single Petunias
First premium, W M Kimball, Rockford 3 00
Second premium, M A Hilles, Dixon 2 00

Best Pair Hanging Baskets of Plants.
First premium, J A Niedermeyer, Freeport 3 00

Best Wardian Case filled with Plants
Premium, W A Burdick, Rockford 5 00

Awarding Committee—H W. Williams, Batavia; E B King, Jerseyville; M. W Stevens, Freeport

LOT 90—CUT FLOWERS

No Professional Florist allowed to compete

Best collection of Cut Flowers
First premium, Lucy E Franklin, Dixon $5 00
Second premium, M A Hilles, Dixon 3 00

Best collection of Asters:
First premium, M A Hilles, Dixon 2 00
Second premium, Lucy E Franklin, Dixon 1 00

Best collection of Balsams:
Premium, M A Hilles, Dixon 2 00

Best collection of Dahlias named, not less than 10 varieties:
First premium, M A Hilles, Dixon 3 00
Second premium, Lucy E Franklin, Dixon 2 00

Best collection of Dahlias named not less than 6 varieties
First premium, Lucy E Franklin, Dixon 2 00
Second premium, M A Hilles, Dixon 1 00

Best collection of Dahlias, Bouquet or Pompone.
First premium, M. A Hilles, Dixon 2 00
Second premium, Lucy E. Franklin, Dixon 1 00

Best collection of Gladiolii, not less than five varities:
First premium, J. Flansburg, Eleroy 3 00
Second premium, M A Hilles, Dixon 2 00

Best collection of Japan Pinks:
First premium. W M Kimball, Rockford 2 00
Second premium, J Flansburg, Eleroy 1 00

Best collection of Pansies:
First premium, W M. Kimball, Rockford 2 00
Second premium, M. A Hilles, Dixon 1 00

Best collection of Phlox Drummondii:
First premium, Lucy E Franklin, Dixon. 2 00
Second premium, G A Imely, Freeport 1 00

Best collection of Verbenas, not less than 6 varieties
First premium, W M. Kimball, Rockford 2 00
Second premium, Lucy E Franklin, Dixon 1 00

Best collection Double Zinnia.
First premium, G A Imely, Freeport 2 00
Second premium, D Welty, McConnel's Grove 1 00

FLORAL DESIGNS, BOQUETS, ETC

Best Floral Design:
First premium, W A Burdick, Rockford $15 00
Second premium, Mrs Wm E. Shutt, Springfield 10 00

Best Floral Design, of Dahlias.
Premium, Lucy E Franklin, Dixon 3 00

Best pair Floral Pyramids, or Mounds
Premium, W A. Burdick, Rockford 3 00

Best Floral Wreath:
Premium, W A Burdick, Rockford 3 00

Best Foral Design of Cut Flowers
Premium, W A Burdick, Rockford 3 00

Best pair Flat Hand Bouquets.
First premium, W A Burdick, Rockford 2 00
Second premium, Lucy E Franklin, Dixon 1 00

Best pair Round Hand Bouquets:
First premium, W A. Burdick, Rockford 2 00
Second premium, Lucy E Franklin, Dixon 1 00

Best Basket of Cut Flowers:
First premium, James Flansburg, Eleroy 3 00
Second premium, W A Burdick, Rockford 2 00

Best Winter Basket of Flowers, Leaves and Mosses
First premium, C H Little, Freeport 3 00
Second premium, A L White, Rockford 2 00

Best pair Winter Bouquets:
First premium, C H Little, Freeport 3 00
Second premium, A L White, Rockford 2 00

Awarding Committee--H W Williams, Batavia, E B King, Jerseyville, M W Stevens, Freeport

CLASS H—HORTICULTURE.

SECTION 2

B PULLEN, *Superintendent*

LOT 91—HOME GROWN FRUITS

For professional Fruit Growers and Orchardists

Best collection of Fruits by a Horticultural Society, to be grown within the territorial limits of the society exhibiting:
First premium, S K Scofield, Freeport $50 00
Second premium, Warsaw Horticultural Society, Jas T Johnson, Secy , Warsaw 25 00
Third premium, Champaign Horticultural Society, Albert Dunlap, Champaign 15 00

Best collection of Apples (Crabs excepted) 25 varieties, with three specimens of each variety:
First premium, A C Hammond, Warsaw 25 00
Second premium, M. L Dunlap Sons, Champaign 15 00

Best collection 15 varieties of Apples for Southern Illinois, value for market purposes to be considered.
First premium, S C Clayton, Alma 15 00

Best collection 15 varieties of Apples for Central Illinois, value for market purposes to be considered:
First premium, A. C Hammond, Warsaw 15 00
Second premium, M L Dunlap Sons, Champaign 10 00

Best collection 15 varieties of Apples for Northern Illinois, value for market purposes to be considered.
First premium, D J Piper, Forreston 15 00
Second premium, Jacob Christian, Mt Carroll 10 00

Best specimen Siberian Crab Apple:
First premium, Chas. Boehme, Freeport . . . 3 00

Best collection Seedling Peaches:
First premium, M L Dunlap Sons, Champaign 4 00

Best collection of Plums, not less than 3 varieties.
First premium, Wm Yeager, Lena 3 00
Second premium, Wm Yeager, Lena 2 00

Best and largest display of Grapes correctly named.
First premium, H. R. Whiteside, Rockford 10 00
Second premium, D. J Piper, Forreston 5 00

Best early Grapes, not less than three bunches:
First premium, Jacob Christian, Mt Carroll 4 00
Second premium, H R. Whiteside, Rockford. 2 00

Best 3 varieties of Late Grapes for table use, not less than 3 bunches each:
First premium, H R Whiteside, Rockford 4 00
Second premium, Jacob Christian, Mt Carroll 2 00

Best three varieties of Wine Grapes, not less than three bunches each:
First premium, D. J. Piper, Forreston 3 00
Second premium, H. R. Whiteside, Rockford 2 00

Best single variety of New Grapes, not less than 2 bunches.
Premium, D J Piper, Forreston 3 00

Most attractive and artistically arranged display of Fruits;
First premium, Warsaw Horticultural Society, Jas T. Johnson, Secretary 25 00
Second premium, Jacob Christian, Mt Carroll... ... ... 15 00

Awarding Committee—Jas W Robinson, Fremont; J P Brubaker, Nachusa; W T Nelson, Wilmington; W. H. Hansen, Franklin Grove

LOT 92—HOME GROWN FRUITS.

By amateurs.

Best collection of Apples, by farmer or amateur, 10 varieties:
First premium, James T. Johnson, Warsaw $8 00
Second premium, J. P. Brubaker, Nachusa 5 00

Best collection of Apples, as above, 6 varieties:
First premium, James T Johnson, Warsaw 5 00
Second premium, J. P Brubaker, Nachusa 3 00

Best collection of Pears, by farmer or amateur:
First premium, W H Hansen, Franklin Grove 3 00
Second premium, J. P. Brubaker, Nachusa 2 00

Best collection of Plums:
First premium, J. P. Brubaker, Nachusa 3 00
Second premium, W. H. Hansen, Franklin Grove 2 00

Best Early Grapes, not less than 4 bunches:
First premium, C N Bentley, Freeport 4 00
Second premium, W H Hansen, Franklin Grove 2 00

Best 3 varieties of Late Grapes, for table use, not less than 3 bunches each:
First premium, C. N Bentley, Freeport 4 00
Second premium, Henry P Kimball, Rockford 2 00

Best 3 varieties of Wine Grapes, not less than 3 bunches each:
First premium, J P Brubaker, Nachusa 4 00
Second premium, W H Hansen, Franklin Grove 2 00

Best 8 varieties of Apples, for Central Illinois:
First premium, J T Johnson, Warsaw 8 00
Second premium, E Dunlap, Savoy 4 00

Best 8 varieties of Apples, for Northern Illinois:
First premium, W H. Hansen, Franklin Grove 8 00
Second premium, J. L. Snyder, Lena 4 00

Best and largest display of Grapes:
First premium, J P Brubaker, Nachusa 8 00
Second premium, C. N Bentley, Freeport 4 00

Awarding Committee—O B Galusha, Morris; Geo J Kellogg, Janesville, Wis ; Dr Wm B Tilton, Morrison; John C Chappell

LOT 93—JELLIES

Best Crab Apple Jelly:
First premium, Mrs J H Deaner, Freeport $2 00
Second premium, A C. Hays, Freeport 1 00

Best Plum Jelly:
First premium, Mrs J. H Deaner, Freeport 2 00
Second premium, J Q. Detwiler, Freeport 1 00

Best Quince Jelly:
First premium, Mrs Cellie Keene, Atlanta 2 00
Second premium, Mrs J H Deaner, Freeport 1 00

Best Apple Jelly:
First premium, Mrs J H. Deaner, Freeport 2 00
Second premium, Z. T. Turner, Eleroy 1 00

Best Currant Jelly:
First premium, Mrs J H. Deaner, Freeport 2 00
Second premium, J Q Detwiler, Freeport 1 00

Best Grape Jelly:
First premium Mrs. J H Deaner, Freeport 2 00
Second premium, Mrs J. H Deaner, Freeport 1 00

Best Peach Jelly:
First premium, Wm J Sawyer, Belvidere 2 00
Second premium, E. H Bierer, Rockford 1 00

Best Blackberry Jelly:
First premium Mrs Mary Maxwell, Reynoldsburg, Ohio 2 00
Second premium, Z. T Turner, Eleroy 1 00

Best Raspberry Jelly
First premium, A L White Rockford 2 00
Second premium, Mrs Wm Horton, Weston 1 00

Best Strawberry Jelly
First premium, E H Bierer, Rockford 2 00
Second premium, J Q Detwiler, Freeport 1 00

Best Gooseberry Jelly
First premium, A A Pettibone, Warren 2 00
Second premium, Mrs J H Deaner Freeport 1 00

Best Cherry Jelly
First premium, Mrs J H Deaner, Freeport 2 00
Second premium, Z T Turner, Elcroy 1 00

Awarding Committee—Mrs B L Porter, Mrs C H Little, Mrs H D Jenkins Mrs J H Miller, Mrs L K Scofield, Freeport

LOT 94—CANNED FRUITS

Best Display of Canned Peaches
First premium, A L White, Rockford $3 00
Second premium E L Darling Freeport 2 00

Best Canned Pears
First premium A L White, Rockford 3 00
Second premium, E H Bierer, Rockford 2 00

Best Canned Plums
First premium Mrs W M Buffington Monmouth 3 00
Second premium, Mrs Cellie Keene, Atlanta 2 00

Best Canned Cherries
First premium, Mrs Wm Horton, Weston 3 00
Second premium, E H Bierer Rockford 2 00

Best Canned Currants
First premium, Mrs Wm Horton, Weston 3 00
Second premium A L White Rockford 2 00

Best Canned Gooseberries
First premium Mrs Wm Horton, Weston 3 00
Second premium Mrs Mary Maxwell Reynoldsburg Ohio 2 00

Best Canned Raspberries
First premium Mrs Cellie Keene, Atlanta 3 00
Second premium, Mrs Wm Horton Weston 2 00

Best Canned Strawberries
First premium, A L White, Rockford 3 00
Second premium Mrs Cellie Keene, Atlanta 2 00

Best Canned Grapes
First premium, Mrs Wm Horton Weston 3 00
Second premium, H J Bierer, Rockford 2 00

Best Canned Tomatoes
First premium Mrs Wm Horton, Weston 3 00
Second premium J Q Detwiler, Freeport 2 00

Best Canned Blackberries
First premium Mrs Mary Maxwell Reynoldsburg, Ohio 3 00
Second premium Mrs Wm Horton, Weston 2 00

Best Canned Quinces
First premium, Mrs Mary Maxwell Reynoldsburg, Ohio 3 00
Second premium Wm J Sawyer, Belvidere 2 00

Awarding Committee—James T Johnson, Warsaw, E Wyman, Jr, Rockford, A C Hammond Warsaw

LOT 95—PRESERVED FRUITS, JAMS, ETC

Best Preserved Crab Apples
First premium, Mrs J H Deaner Freeport $3 00
Second premium Mrs Wm Horton, Weston 1 00

Best Preserved Peaches
First premium, E H Bierer, Rockford 2 00
Second premium, A L White, Rockford 1 00

Best Preserved Plums:
First premium, Mrs Cellie Keene, Atlanta 2 00
Second premium, Mrs J. H. Deaner, Freeport 1 00

Best Preserved Apples:
First premium J Q. Detwiler, Freeport 2 00
Second premium, Mrs Wm. Horton, Weston 1 00

Best Preserved Quinces:
First premium, Mrs J H. Deaner, Freeport 2 00
Second premium, Mrs Cellie Keene, Atlanta 1 00

Best Preserved Grapes:
First pramium, Mrs. Mary Maxwell, Reynoldsburg, Ohio 2 00
Second premium, Mrs Cellie Keene, Atlanta 1 00

Best Preserved Pears:
First premium, Mrs Mary Maxwell, Reynoldsburg, Ohio 2 00
Second premium, Mrs. Cellie Keene, Atlanta 1 00

Best Preserved Strawberries.
First premium, Cellie Keener, Atlanta 2 00
Second premium, Mrs. J H. Deaner, Freeport 1 00

Best Preserved Cherries:
First premium, Mrs Cellie Keene, Atlanta 2 00
Second premium, Mrs Mary Maxwell, Reynoldsburg, Ohio 1 00

Best Preserved Tomatoes:
First premium, Mrs Mary Maxwell, Reynoldsburg, Ohio.... 2 00
Second premium, Mrs Wm Horton, Weston 1 00

Best Apple Butter:
First premium, Mrs Wm Horton, Weston 2 00
Second premium, Mrs B Shirey, Ridott 1 00

Best Raspberry Jam:
First premium, Z T Turner, Eleroy 2 00
Second premium, E H Bierer, Rockford 1 00

Best Blackberry Jam:
First premium, Mrs Cellie Keene, Atlanta 2 00
Second premium, Mrs Wm Horton, Weston 1 00

Awarding Committee—Mrs B L Porter, Mrs C H Little, Mrs H D Jenkins, Mrs J. H Miller, Mrs. L. K Scofield

LOT 96—PICKLES, CATSUPS, ETC

Best Sour Pickled Cucumbers:
First premium, Mrs Mary Maxwell, Reynoldsburg, Ohio $2 00
Second premium, Wm J Sawyer, Belvidere 1 00

Best Sweet Pickled Cucumbers:
First premium, Z T Turner, Eleroy 2 00
Second premium, Mrs. J H Deaner, Freeport 1 00

Best Pickled Cherries:
First premium, E H. Bierer, Rockford 2 00
Second premium, Wm J Sawyer, Belvidere 1 00

Best Pickled Mangoes:
First premium, Mrs B Shirey, Ridott 2 00
Second premium, Mrs Wm Horton, Weston 1 00

Best Pickled Peaches;
First premium, Mrs. J H Deaner, Freeport 2 00
Second premium, Mrs. Cellie Keene, Atlanta 1 00

Best Pickled Gherkins:
First premium, Mrs Cellie Keene, Atlanta 2 00

Best Pickled Tomatoes:
First premium, Wm J Sawyer, Belvidere 2 00
Second premium, E H Bierer, Rockford 1 00

Best Tomato Catsup:
Premium, A A Pettibone, Warren 3 00

Largest and best display of Jellies, Canned Fruits, Preserves, Jams, Pickles and Catsups, by one exhibitor:
First premium, Mrs Cellie Keene, Atlanta 10 00
Second premium, H. J. Bierer, Rockford 5 00

Awarding Committee—Mrs P A Cutts, Polo; Mrs. Ida Melcher, Rockford; Mrs. Lucy Franklin, Dixon; Mrs. L. K. Scofield, Freeport.

CLASS I—FINE ARTS.

JAMES M WASHBURN, *Superintendent*

LOT 97—MUSICAL INSTRUMENTS

Best Flute:
Premium, G. B Roe, Paines Point .... Silver medal

Awarding Committee—Helen J Bierer, Rockford; Emily L Weight, Freeport.

LOT 98—SCULPTURE, PAINTING, DRAWING, ETC

Best Portrait in Oil:
Premium, H. R Whiteside, Rockford .. . . Diploma

Best original Oil Painting of an Illinois Landscape:
First premium, Carrie M Vaughn, Oregon, Ill .. Diploma and $30 00
Second premium, Miss Jennie Aurand, Freeport . 15 00

Best collection of five Oil Paintings.
Premium, H R Whiteside, Rockford .... Silver medal

Best specimen Flower Painting in Water Colors:
Premium, Vena G Hurley, Mt Carroll . . . . Silver medal

Best Portrait in Pastile:
Premium, Josephine C. Henry, Chicago . . . Siver medal

Best Portrait in Crayon:
Premium, George Lawson, Chicago . . . Silver medal

Best Crayon Drawing other than Portrait.
Premium, H R Lyman, Rockford . . Silver medal

Best Plain Photograph:
Premium, A N. Rockstead, Mt Carroll ... . Diploma.

Best Collection of 12 Stereoscopic Views.
Premium, E H. Bierer, Rockford . . .. Silver Medal

Best Pencil Drawing:
Premium. Miss Alice Ford, Freeport . . . . Diploma

Best Pencil Drawing by Girl under 15:
Premium, E L Darling, Freeport . . . . . Diploma.

est Collection of Pencil Drawings.
Premium, Miss Alice Ford, Freeport . . . . Diploma

Best Plain Penmanship:
Premium, Baylies Commercial College, Dubuque, Iowa .... Silver Medal

Best Ornamental Penmanship:
Premium, H C Clark, Rockford . Silver Medal.

Best Pen Drawing:
Premium, H C Clark, Rockford . . Silver Medal.

Best Pen Lettering.
First premium, Baylies Commercial College, Dubuque, Iowa .. . Silver Medal.
Second premium, E C A. Becker, Rockford $5 00

Best Course in Book Keeping.
Premium, Baylies Commercial College, Dubuque, Iowa . . .. . . .Silver Medal

Awarding Committee- Mrs. C W Hunt, Freeport; Miss Helen Bierer, Rockford; Miss Kate J Russell, Oswego; Miss Emily L Wright, Freeport; Mrs Emily V. Keever, Freeport; Miss Ida Bucher, Cedarville.

LOT 99—WAX, FEATHER, HAIR WORK, ETC.

Best Sample White Wax Work:
First premium, Mrs A J. Atwood, Burritt.... $2 00
Second premium, Martha Highbarger, Adeline. 1 00

Best Sample Colored Wax Work:
First premium, Mrs C H Little, Freeport... 2 00
Second premium, Mrs C H. Little, Freeport... 1 00

Best Sample of Work in Feathers:
First premium, Martha Highbarger, Adeline 2 00
Second premium, Mrs H Austin, Kent 1 00

Best Sample of Work in Hair:
First premium, Miss Amanda McMillan, Haldane 2 00
Second premium, Mrs H Fletcher, Forreston 1 00

Best Shell Work:
First premium, H G Roberts, Janesville, Wis 2 00
Second premium, A L White, Rockford 1 00

Best Fancy Worsted Bouquet:
First premium, A L. White, Rockford 2 00
Second premium, L E. King, Florence 1 00

Best Leather Work:
Premium, Mrs L H Price, Freeport 2 00

Best Bead Work:
First premium, A L White, Rockford 2 00
Second premium, Mrs Wm Horton, Weston 1 00

Best Mosaic or Paper Mache Work.
First premium, Jno C Chappell, Rockford 2 00
Second premium, P G Bauder, Rockford 1 00

Best Agricultural Wreath:
First premium, Miss Amanda McMillan, Haldane 2 00

Awarding Committee—Mrs. C W Hunt, Freeport; Mrs E. F Keever, Freeport; Miss Ida M Bucher, Cedarville; Helen J. Bierer, Rockford; Miss E L Wright, Freeport

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CLASS K—TEXTILE FABRICS.

LOT 100—MILL FABRICS, ETC—No entries

E H BISHOP. *Superintendent.*

LOT 101—HOUSEHOLD FABRICS, ALL WOOL.

Best 10 Yards Flannel:
First premium, Mrs. Mary Maxwell, Reynoldsburg, O $4 00
Second premium, B A. Graves, Freeport 2 00

Best Pair Blankets:
First premium, Mrs J Nearing, Kenney 5 00
Second premium, B A. Graves, Freeport 3 00

Best Display of Yarns:
First premium, Z T Turner, Eleroy 3 00
Second premium, B A Graves, Freeport 2 00

Best Pair Ladies Stockings:
First premium, Mrs Mary Maxwell, Reynoldsburg, O 3 00
Second premium, Mrs. M. B. Jewell, Tuscola 2 00

Best Pair Men's Socks	
First premium, Mrs Mary Maxwell, Reynoldsburg, O	3 00
Second premium Mrs Wm Horton, Weston	2 00
Best Pair Gloves	
First premium, Mrs Wm Horton Weston	3 00
Second premium, A L White, Rockford	2 00
Best Pair Mittens	
First premium M A Hilles, Dixon	3 00
Second premium Wm J Sawyer, Belvidere	2 00

MIXED WOOL AND COTTON

Best Coverlet	
First premium M J Wells Bonus	5 00
Second premium, Mrs J Nearing, Kenney	3 00
Best 10 Yards Jeans	
First premium B A Graves Freeport	5 00
Best 10 Yards Linsey	
First premium Mrs Mary Maxwell Reynoldsburg, O	5 00
Second premium B A Graves Freeport	3 00
Best 10 Yards Rag Carpet	
First premium, Mrs Ida Collidge Pecatonica	5 00
Second premium Mrs Nettie Stebbins, Freeport	3 00
Best Foot Mats made of Wool	
First premium L E Colton Princeton	3 00
Second premium, L E Colton, Princeton	2 00
Best Foot Mats made of Rags	
First premium Mrs S R McFadden, Atlanta	3 00
Second premium, Mrs W H Snooks Freeport	2 00
Best Carpet Warp spun by Exhibiter	
Premium Mrs J Nearing Kenney	2 00

Awarding Committee—Diana Day, Nevada Mrs G F Smith Freeport Mrs A Hess Dakota

LOT 102 HAND SEWING

Comprising Plain Garments

Best coarse Shirt, unbleached	
First premium A L White Rockford	$3 00
Second premium Z T Turner, Eleroy	2 00
Best Plain Night Dress	
First premium Mrs Wm Horton Weston	3 00
Second premium, Mrs J Nearing Kenney	2 00
Best Plain Chemise	
First premium Mrs J Nearing Kenney	3 00
Second premium A L White Freeport	2 00
Best Calico Dress	
Premium, Mrs Wm Horton, Weston	3 00
Best Pair of Pants	
First premium, Mrs Wm Horton Weston	3 00
Second premium, Mrs, M A Hilles Dixon	2 00
Best Vest	
First premium Lucy E Franklin Dixon	3 00
Second premium, Mrs Mary Maxwell Reynoldsburg, Ohio	2 00
Best Boy s Suit	
Premium, Lucy E Franklin, Dixon	3 00
Best specimen Darning and Repairing	
First premium Mrs Wm Horton Weston	3 00
Second premium A L White, Rockford	2 00

Awarding Committee—Mrs L Disbrow, Alden, Mrs John Wilcox, Rockford, Mrs F L Achenbach, Freeport

LOT 103—ORNAMENTAL NEEDLEWORK

Best specimen Braiding.	
First premium, R F Anthony, Sterling	$4 00
Second premium, Mrs E L Gilliam, Merritt	2 00
Best specimen Hemstitching	
First premium, Mrs Cellie Keene, Atlanta	4 00
Second premium, Mrs Libbie M Thomas, Terre Haute, Ind	2 00
Best specimen Silk Embroidery	
First premium, Mrs A B Savage, Forreston	4 00
Second premium, Mrs Libbie M Thomas Terre Haute, Ind	2 00
Best specimen Worsted Embroidery	
First premium, Mrs M A Thurston, Rockford	4 00
Second premium, Mrs C H Little Freeport	2 00
Best specimen Cotton Embroidery	
First premium, Miss Mary Pollard Springfield	2 00
Second premium, Mrs A F Jackson, Marseilles	1 00
Best specimen Silver Embroidery	
First premium, Mrs Wm E Shutt, Springfield	4 00
Second premium, Mrs Wm E Shutt, Springfield	2 00
Best specimen Gold Embroidery	
First premium, A L White, Rockford	4 00
Second premium, Mrs Wm E Shutt, Springfield	2 00
Best Embroidered Cover for Chair	
First premium, Mrs Libbie M Thomas, Terre Haute, Ind	4 00
Second premium, Mrs F Bartlett, Freeport	2 00
Best Cover for Ottoman	
First premium, Mrs A B Savage, Forreston	4 00
Second premium, Mrs Mary Wright, Freeport	2 00
Best Sofa Pillow	
First premium Mrs M Fotherby, Freeport	4 00
Second premium, Miss Amanda McMillan Haldane	2 00
Best Chair Cushion	
First premium, W M Buffington, Monmouth	4 00
Second premium, Mrs J Nearing, Kenney	2 00
Best Infant Skirt, embroidered	
First premium, Mrs Libbie M Thomas, Terre Haute, Ind	3 00
Second premium, Mrs Wm E Shutt, Springfield	2 00
Best Carriage Afghan	
First premium A L Medeira Freeport	8 00
Second premium, Mrs J H Busby, Mt Carroll	4 00
Best Infant Afghan	
First premium, Mrs F Bartlett, Freeport	4 00
Second premium, Mrs Mary Wright, Freeport	2 00
Best Toilet Sett, embroidered	
First premium, Sallie J Johnston, Freeport	3 00
Second premium, J A Cochran, Freeport	2 00
Best Worsted Tapestry Work	
First premium Marie J Middleditch, Freeport	3 00
Second premium Mrs A F Jackson Marseilles	2 00
Best Japanese Tidy	
First premium, Mrs J Nearing, Kenney	2 00
Second premium, Mrs C H Little, Freeport	1 00
Best Needle Book	
First premium, Mrs L M Thomas, Terre Haute Ind	2 00
Second premium, Mrs W M Buffington, Monmouth	1 00
Best Worsted Tapestry Picture	
First premium Mrs L M Thomas, Terre Haute, Ind	3 00
Second premium, Mrs Wm Horton, Weston	2 00
Best Specimen Bead Embroidery	
First premium, Mrs W M Buffington, Monmouth	4 00
Second premium, Wm J Sawyer, Belvidere	2 00
Best Stamping for Embroidery	
Premium, Mrs J Nearing, Kenney	2 00

WORK DONE ON MACHINE.

Best Specimen Embroidery:
First premium, Mrs J Brown Taylor, Freeport..... 3 00
Second premium, Mrs. J Brown Taylor, Freeport..... 2 00

Best Specimen Tucking:
First premium, Mrs M A Thurston, Rockford..... 2 00
Second premium, Mrs J Nearing, Kenney..... 1 00

Awarding Commiteee—Mrs Augustus Ford, Freeport; Mrs. J P Davis, Shelbyville; Mrs. Rogers, Downer's Grove.

LOT 104.—FANCY WORK.

Best Lace Handkerchief:
First premium, Mrs Mary Wright, Freeport..... $3 00
Second premium, Mrs Emily V Keever, Freeport..... 2 00

Best Lamp Mat:
First premium, Sallie J Johnston, Freeport..... 2 00
Second premium, Mary C Johnston, Freeport..... 1 00

Best Watch Case:
First premium, Mrs. L. M Thomas, Terre Haute, Ind..... 2 00
Second premium, Sallie J. Johnston, Freeport..... 1 00

Best Card Receiver:
First premium, Sallie J. Johnston, Freeport..... 2 00
Second premium, Mrs. Wm Horton, Weston..... 1 00

Best Work Basket:
First premium, A L. White, Rockford..... 2 00
Second premium, Mrs L M Thomas, Terre Haute, Ind..... 1 00

Best Comb Case:
First premium, Lola Peters, Winslow..... 2 00
Second premium, Miss Amanda McMillan, Haldane..... 1 00

Best Tidy in Wool:
First premium, Mary C Johnston, Freeport..... 3 00
Second premium, Mrs W M Buffington, Monmouth..... 2 00

Best Tidy in Cotton:
First premium, Mary C Johnston, Freeport..... 3 00
Second premium, Mrs H L Bush, Downer's Grove..... 2 00

Best Crochet Work in Worsted:
First premium, Mrs W. M. Buffington, Monmouth..... 2 00
Second premium, C A. Snyder, Freeport..... 1 00

Best Crochet in Cotton:
First premium, Mrs. F. M Haynie, Farmer City..... 2 00
Second premium, A L White, Rockford..... 1 00

Best Crochet Work in Linen:
First premium, Mary C Johnston, Freeport..... 2 00
Second premium, Mrs Wm Horton, Weston..... 1 00

Best Sample Netting:
First premium, M A. Hilles, Dixon..... 2 00
Second premium, Mrs. N. J Churchill, Eleroy..... 1 00

Best Pin Cushion:
First premium, Mr N J. Churchill, Eleroy..... 2 00
Second premium, Mrs. A. F. Jackson, Marseilles..... 1 00

Best Toilet Cushion:
First premium, Mrs L M Thomas, Terre Haute, Indiana..... 2 00
Second premium, Mr. Abner Strawn, Ottawa..... 1 00

Handsomest Rag Basket:
First premium, Mary Wright, Freeport..... 2 00
Second premium, Miss Luna A Brace, Ridott..... 1 00

Handsomest Air Castle:
First premium, Mary A. Thurston, Rockford..... 2 00
Second premium, R. F. Anthony, Sterling..... 1 00

Best Card Basket:
First premium, Mrs M. A Hilles, Dixon..... 2 00
Second premium, Mrs J. Nearing, Kenney..... 1 00

Awarding Committee—Mrs. J. P. Davis, Shelbyville: H. C Blake, Mt. Carroll; Miss Weakly, Shelbyville.

LOT 105—NEEDLE WORK

By Girl under 13 years of age

Best Plain Sewing	
First premium, Libbie Nearing, Kenney	$2 00
Second premium, Lou Keene Atlanta	1 00
Best Fine Shirt, unwashed	
First premium, Maggie Maxwell, Reynoldsburg, Ohio	2 0
Second premium, Libbie Nearing, Kenney	1 0
Best Coarse Shirt, unbleached	
Premium, Libbie Nearing Kenney	2 00
Best Plain Chimese	
First premium, Libbie Nearing, Kenney	2 00
Second premium Alice M Price, Freeport	1 00
Best Hand Made Calico Dress	
First premium, Nellie L Davis	2 00
Second premium, Alice M Price Freeport	1 00
Best Patch Work Quilt	
First premium Libbie Nearing Kenney	2 00
Second premium, Mrs P Smith, Forreston	1 00
Best Specimen Darning and Repairing	
First premium, Lou Keene Atlanta	2 00
Second premium, Mabel Hoffman	1 00
Best Sample Braiding	
First premium, Libbie Nearing Kenney	2 00
Second premium, Libbie Nearing Kenney	1 00

FANCY WORK

Best Tidy in Wool	
First premium, Lou Keen Atlanta	2 00
Second premium, Libbie Nearing	1 00
Best Tidy in Cotton	
First premium, Nellie L Davis, Freeport	2 00
Second premium, Libbie Nearing, Kenney	1 00
Best Specimen Tatting	
First premium Libbie Nearing, Kenney	2 00
Second premium, Lou Keene, Atlanta	1 00
Best Silk Embroidery	
Premium Lou Keene, Atlanta	2 00
Best Cotton Embroidery	
First premium, Libbie Nearing, Kenney	2 00
Second premium, Maggie Maxwell Reynoldsburg, O	1 00
Best Worsted Tapestry	
Premium, Miss T H Kintzle Freeport	2 00
Best Crochet Work	
Premium, Lou Keene, Atlanta	2 00
Best Cardboard Work	
First premium, Amanda McMillan Haldane	2 00
Second premium, Miss Mary Wright, Freeport	1 00
Best Toilet Set Embroidered	
First premium Lou Keene Atlanta	2 00
Second premium Libbie Nearing Kenney	1 00
Best Needle Case	
Premium, Mrs Mary Wright, Freeport	2 00

KNITTING WORK

Best Pair Men's Socks	
First Premium Wm J Sawyer, Belvidere	2 00
Second premium, Lou Keene, Atlanta	1 00
Best Pair Ladies Stockings	
First Premium Maggie Maxwell, Reynoldsburg, O	2 00
Second premium, Maggie Maxwell, Reynoldsburg, O	1 00

Best Pair Mittens,
First premium, Mrs A A Pettibone, Warren 2 00
Second premium, Lou Keene, Atlanta 1 00

Best Pair Gloves
First premium, B A Graves, Freeport 2 00

Best Hearth Rug
First premium, Libbie Nearing, Kenney 2 00

Awarding Committee—Mrs F Disbrow, Alden, Mrs H R Smith, Mt Morris, Mrs J N Stonebraker, Mt Morris

LOT 106—QUILTS AND NEEDLE WORK

Best Patchwork Calico Quilt
First premium, Mrs J M Smith Freeport $4 00
Second premium, Mrs W M Buffington Monmouth 2 00

Best Patchwork Cloth Quilt
Second premium, A L White, Rockford 2 00

Best Patchwork Silk Quilt
First premium Belle Bradford, Springfield 8 00
Second premium, Blanche Bradford, Winslow 4 00

Best White Quilt Solid on Muslin
First premium, Mrs J Nearing, Kenney 4 00
Second premium, M A Hilles, Dixon 2 00

Best Worsted Quilt
First premium, Mrs L M Thomas, Terre Haute, Indiana 4 00
Second premium Mrs Cellie Keene Atlanta 2 00

Best Domestic Counterpane
First premium Mrs M Maxwell, Reynoldsburg, Ohio 4 00
Second premium Wm J Sawyer Belvidere 2 00

Best Knit Counterpane
First premium, M J Wells, Bonus 4 00
Second premium, Mrs F M Bradford, Winslow 2 00

Best Fine Night Dress
First premium, Mrs L H Price Freeport 3 00
Second premium, Mrs A B Savage, Forreston 2 00

Best Fine Shirt
First premium, Mrs L M Thomas, Terre Haute Ind 3 00
Second premium, A L White, Rockford 2 00

Best Fine Chemise
First premium Mrs Wm Horton Weston 3 00
Second premium Mrs L M Thomas Terre Haute, Indiana 2 00

Awarding Committee Miss L E Colton Princeton Miss I A Hatch, Princeton, Mrs E J Rubendall Shannon

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CLASS L.—NATURAL HISTORY

J M WASHBURN, *Superintendent*

LOT 107—BOTANY, MINERALOGY AND CONCHOLOGY

Best collection illustrating the Botany of Illinois
First premium, Mary E Holmes, Rockford $30 00
Second premium Clark D W Brown, Aurora 15 00

Best Collection of Minerals not less than 50 species
First premium Miss Mary E Holmes, Rockford 30 00
Second premium, Annie A Pope, Freeport 15 00

Best collection of Illinois Birds of not less than 50 species, male and female
First premium, Clark D W Brown Aurora 40 00
Second premium, E H Lyman, Rockford 20 00

Awarding Committee—M S Bebb Fountaindale J F Connell, Marion, James S Taggart Ridott, James P Slade, Belleville

LOT 108—ENTOMOLOGY, HERPETOLOGY, ETC

Best Collection of Insects
First premium, P G Bauder Rockford 30 00
Second premium, Clark D W Brown, Aurora 15 00

Best Collection of Woods of Illinois
First Premium C W Warner, Rockford 20 00
Second Premium, J C Chappell Rockford 10 00

Best Collection of Fossil Woods
Premium Miss Mary E Holmes Rockford 5 00

Awarding Committee—James S Taggart Ridott James F Connell, Marion M S Bebb, Fountaindale James P Slade, Belleville

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CLASS M—EQUESTRIANISM

JOHN LANDIGRAN *Superintendent*

LOT 109—BOYS RIDING

To Boy not over 14 years old displaying the best Horsemanship in the Saddle
First premium Charles J Burchard Freeport 10 00
Second premium J A Cochran Freeport 5 00
Third premium F J Parker Freeport 3 00
Fourth premium Matthew Marvin Freeport 2 00
Fifth premium George Dunlap Bloomington 1 00

Awarding Committee W J Nutz Ottawa N H Paaren Chicago H L Bush, DuPage V P Richmond, Mora Solomon Thacher, jr, Thacher Park

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CLASS N—EDUCATION

EMFRY COBB *Superintendent*

LOT 110 HIGH SCHOOL EXHIBIT

Best specimen General Work
First premium Lake View High School $15 00
Second premium, Mendota High School 10 00

Awarding Committee—Mrs Mary L Carpenter, Rockford, C C Snyder, Freeport

LOT 111—PRIMARY DEPARTMENT.

Best exhibit in Spelling:
First premium, Mendota Primary School. $12 00
Second premium, Springfield Primary School.... 8 00

Best exhibit in Penmanship:
First premium, Freeport Primary School 12 00

Best specimen Drawing:
First premium, Champaign Primary School 12 00
Second premium, Freeport Primary School 8 00

Best work in Arithmetic:
First premium, Evanston Primary School..... 12 00
Second premium, Springfield Primary School 8 00

Best work in Natural History:
First premium, Freeport Primary School 12 00

Awarding Committee.—Miss E L Darling, Freeport; Mrs. Mary L. Carpenter, Rockford

LOT 112-RURAL DISTRICT SCHOOLS.

Best exhibit in Spelling:
First premium, Livingston county district school. $15 00
Second premium, Adams county district..... 10 00

Best work in Arithmetic:
First premium, Winnebago county district school 15 00
Second premium, Adams county district school. 10 00

Awarding Committee—Miss E M. Russell, Freeport; A. A Krape, Lena; Miss L H Resley, Freeport

MEETINGS DURING FAT STOCK SHOW.

EXPOSITION BUILDING,
CHICAGO, December 2, 1878,
MONDAY, 2 o'clock P. M.

President Gillham being absent, ex-President Reynolds called the meeting to order.

Present: Vice-Presidents Ellsworth, Emery, Periam, Haskell, Moore, Dysart, Vittum, Beaty, Smith, Stooky, Landrigan and ex-President Reynolds.

The chairman stated that the object of the meeting was the appointment of judges to pass upon the stock upon exhibition.

The following gentlemen were recommended and confirmed as judges: F. X. Schattgen, Jerseyville; James Peltz, Polo; John Dallenbaugh, Champaign; George Metzger, Springfield; J. F. Neilton, Allegany City, Pa.; J. F. Buggs, Downer's Grove; A. Trostle, Franklin Grove; Jol n Imboden, Decatur; A. J. Barnes, Bloomington; C. W. Weisse, Gilman and C. J. Ward, Chicago.

The committee appointed to have the necesary stalls, pens &c., constructed for the Fat Stock Show, made the following report, which was read, and,

On motion of Mr. Smith,

The rules governing the Fat Stock Show were amended in accordance with the recommendations of the committee and the report adopted:

[Report.]

To the State Board of Agriculture:

Your Committee, appointed to fit up the Exposition building for the Fat Stock Show, would report, that the committee met in the Exposition building on the 23d of November. Present, Messrs Gillham, Reynolds and Scott; also, Messrs Emery, Periam, Moore and Ellsworth of the Board, who were invited to participate in the meeting.

The following resolutions, introduced by Mr Reynolds, were adopted:

Resolved, That we are in favor of rescinding so much of Rule 2--Animals—which provides that "no animal entered for premium at this Show of Fat Stock will be eligible for competition at any future exhibition," as relates to steers, 3-year olds and under, and that we will recommend such action by the Board

Resolved, That parties desiring to enter fat or breeding stock, for exhibition only, will be accommodated to the extent of surplus space at the disposal of the Board for this purpose, on condition that they pay the regular entry fees, and all expenses necessary for the preparation of accommodation for the stock while on exhibition. In case of breeding stock, this privilege shall be confined, in each case, to a herd, not exceeding seven animals, and the rule excluding the exhibition of such animals at subsequent exhibitions shall not apply

Resolved. That parties desiring to exhibit feed mills, or other articles germane to the exhibition, be admitted on payment of an entry fee of $5 for space.

Resolved, That we are in favor of rescinding so much of Rule 3, which provides that animals and poultry, entered for competition must have been the property of the exhibitors on and after August 1, 1878, so as to limit time of ownership to only 30 days previous to the exhibition; and that we will recommend such change to the Board

The committee has contracted with Charles Brown, of Chicago, for removing platforms, furnishing the lumber and building one hundred and twelve stalls, according to speci-

fications (10x12 ft.) with feed box and manger, for the accommodation of stock exhibited at the Show; the stalls to be removed at the close of the show, and the platforms replaced; the lumber to revert to the said Brown, who is to receive in full, for use of lumber and such services, the sum of $255 00

A contract has been made with S. H. Moore, of Chicago, to furnish band music for the Show and provides for a good band of ten pieces, together with band-wagon and four horses, for the Chicago Fat Stock Show, Dec 3 to 7, 1878, inclusive, to play in the streets of Chicago each day from 9 o'clock a m., to 12 m , and from 1:30 p. m., to 5 p. m., with said ten pieces; also to furnish 12 pieces and play for said show in the Exposition building each evening, from 7 to 10 o'clock, for the sum of $235 00

Respectfully submitted.

D B GILLHAM,
JOHN P REYNOLDS,
J. R. SCOTT,
Committee.

On motion of Mr. Beaty,

The report was amended by striking out the limitation of the time of ownership of animals on exhibition, and adopted.

Motion of Mr. Ellsworth, carried—

That the Superintendent of Forage and Stalls be authorized to issue the necessary admission tickets to employes.

Motion of Mr. Vittum, carried—

That a ring be made in the several classes of sheep, for ewes two years old and under three years, with same premiums as for three year old ewes; also, sweepstakes ring for ewes, same age, without cash or plate premium.

On motion of Mr. Beaty,

Adjourned, subject to call of the President.

EXPOSITION BUILDING,
CHICAGO, December 3, 1878,
TUESDAY, 11 o'clock A. M.

Board met on call of ex-President Reynolds.

Present: Vice Presidents, Ellsworth, Emery, Haskell, Moore, Dysart, Cobb, Vittum, Beaty, Judy, Smith, Scott, Stookey, Snoad and ex-President Reynolds.

Minutes of yesterday's meeting read and approved.

Motion of Mr. Dysart, carried—

That the custom prevalent at the State Fair, of announcing premiums awarded, be adopted for this show.

Motion of Mr. Smith, carried—

That the Superintendent of Class "A" be authorized to select a committee of three from the appointed judges, to pass upon the grand sweepstakes in cattle, and that the gentlemen appointed by the superintendent, to act independent of each other, and that the members of the committee shall not be made acquainted with each other until after the first ballot in the ring.

Motion of Mr. Cobb, carried—

That the Secretary be instructed to procure a suitable case for exhibiting the premium plate.

Motion of Mr. Stookey, carried—

That a premium be offered for the best car-load of fat hogs.

Motion of Mr. Cobb, carried—

That the several superintendents be authorized to select committeemen from the judges appointed by the Board and proceed with the awards according to custom at the State Fair.

Motion of Vittum, carried—

That Messrs. Scott and Dysart be appointed a committee to provide a suitable exhibition ring for the showing of stock.

Motion Mr. Cobb, carried—

That the Board adjourn, subject to the call of the president.

EXPOSITION BUILDING,
CHICAGO, December 4, 1878.
WEDNESDAY, 2:30 o'clock P. M.

Board met on call of the President.

President Gillham in the chair.

Present: Vice-Presidents Ellsworth, Emery, Moore, Dysart, Vittum; Douglas, Beaty, Judy, Smith, Scott, Bishop, Stookey, ex-President Reynolds and President Gillham.

Motion of Mr. Scott, carried—

That the President be authorized to enter into a contract with D. W. Lusk, State Binder for the interest on the amount necessary to bind the 15th annual report of the transactions of the State Board of Agriculture, the interest not to exceed 10 per cent. per annum and to commence from the time the entire edition is received by the Secretary of the department, said interest to continue until the State Binder receives his pay from the State, and not longer than July 1, 1879.

Motion of Judy, carried—

That the Superintendent of Class A, cattle, be authorized to increase the committee to pass on car load lots.

The following resolution introduced by Mr. Beaty, was adopted:

Resolved, That the thanks of the Illinois State Board of Agriculture be tendered to A. M. Gilbert & Co., of Chicago, for the use of one cattle and one platform scale of Howe manufacture, which were used for weighing the stock on exhibition at the Fat Stock Show

Resolved, That the scales gave entire satisfaction to the Board and exhibitors

On motion of Mr. Stookey,

Board adjourned subject to call of the President.

EXPOSITION BUILDING,
CHICAGO, December 6, 1878.

Board met on call of the President.

Present: President Gillham, ex-Presdient Reynolds, Vice-Presidents Ellsworth, Emery, Periam, Moore, Dysart, Cobb, Douglas, Beaty, Smith, Scott, Stookey and Landrigan.

The President presented the following communication:

GRAND PACIFIC HOTEL,
CHICAGO, December 6, 1878.

Hon. D. B. Gillham, President State Board of Agriculture:

DEAR SIR: I should be happy to have you extend an invitation to all the members of the State Board and officers to dinner at the Grand Pacific, to-day or to-morrow, at such hour as would best suit you or them—or, if a dinner would not be suitable, a supper at any hour you may desire

If acceptable, please inform me the time and the number that will be present

Yours truly,

JOHN B DRAKE.

On motion of Mr. Scott,

The invitation was accepted, and 2 o'clock to-morrow fixed as the hour for dinner.

On motion of Mr. Beaty,

The President was instructed to notify Mr. Drake of this action, and to tender him the thanks of the Board for the invitation.

On motion of Mr. Scott,

The Secretary was instructed to advertise for proposals for holding the State Fair for the years 1879 and 1880, for the consideration of the incoming board.

On motion of Mr. Cobb,

President Gillham, Vice-President Scott and Secretary Fisher were appointed a committee to revise the specifications of requirements for the accommodation of the several departments at the Fair for 1879 and 1880.

On motion of Mr. Cobb,

The bills for traveling and hotel expenses of awarding committees were approved and ordered paid.

On motion, the Board adjourned.

D. B. GILLHAM,
President.

S. D. FISHER,
Secretary.

REPORT

OF THE

FIRST ANNUAL

FAT STOCK SHOW,

HELD BY THE

ILLINOIS STATE BOARD OF AGRICULTURE,

IN THE

EXPOSITION BUILDING

CHICAGO,

DECEMBER 2—7, 1878.

EXHIBITORS.

CLASS A—CATTLE.

(The figures denote the entries of each exhibitor.)

SHORTHORNS.

Baugh, J & Son, Farmers' Institute, Ind ..... 13.
Brown's, J N Sons, Berlin ..... 5, 10, 16, 17, 18.
Cobb, Emory, Kankakee ..... 15.
Nelson, H C Canton ..... 7, 8, 9, 14.
Van Meter & Hamilton, Winchester, Ky ..... 1, 2, 3, 4, 6, 11, 12.

HEREFORDS

Miller, T L, Beecher 19, 20, 23, 24, 25
Powell, William, Beecher 21, 22, 26

DEVONS.

Bidwell, Thomas Gurnee ..... 29, 30.
Saun, Sanford, Kingston Station ..... 27, 28.
Smith, W. T, Elkhorn, Wis ..... 31.

GRADES AND CROSSES

Fisher, John, Canton ..... 45.
Gray, George, Sr, Rushville, Ind 34, 35
Gillettt, J D., Elkhart 36, 44, 47, 48, 53, 60, 61, 63, 64, 65, 66, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83
Miller, T L, Beecher ..... 43 46, 54, 55.
Millar, Charles, Williamsville 32
Moninger D M Albion, Iowa 41, 42
Nelson, H C, Canton 56, 57, 58, 59
Pauley, H J, Plattsburg, Mo 50, 51, 52. 62, 67, 68, 69, 70, 71, 72.
VanMeter & Hamilton, Winchester, Ky ..... 37, 38, 39, 40, 49, 84.
Whitnah, H. A, Canton 33

CLASS C—SHEEP.

COTSWOLDS

Brown, J S. & Son, Decatur 85,
Snell's, J Sons, Edmonton, Ca ..... 86, 87, 89, 90, 91.
Willson, Frank, Jackson, Mich ..... 88.

CLASS D—SWINE.

POLANDS

Castle, H C Wilmington	92, 97, 102 103, 105.
Miner, A L Momence	93, 94 98
Orton, B J Cambridge	96, 101, 104

BERKSHIRES

Miller, T. L Beecher	99, 100

CHESTER WHITES

Todd, S H , Wakeman, Ohio	95.

ESSEX

Willson Frank, Jackson, Michigan	106

GRADES OR CROSSES

Scheidt & Davis, Dyer, Ind	107, 108, 109.

CLASS E—POULTRY.

Scheidt & Davis	Dyer, Ind
Frink & Patrick	Bloomington
Axford & Co	Chicago

WILD GAME

Sloan Bros	Chicago

AWARDING COMMITTEES

CLASS A—CATTLE.

THOROUGHBREDS, ETC

LOT 1—SHORTHORNS LOT 2—HEREFORDS LOT 3—DEVONS LOT 4—OTHER PURE BREEDS, NOT NAMED LOT 5—GRADES OR CROSSES

Name	Residence	County
C W Wiese	Gilman	Iroquois
J Dallenbach	Champaign	Champaign
John G. Imboden	Decatur	Macon

LOT 6—SWEEPSTAKES RINGS.

(OPEN TO ALL)

James Pletz	Polo	Ogle
J F Briggs	Downer's Grove	DuPage
George Metzger	Springfield	Sangamon

LOT 7—GRAND SWEEPSTAKES

(OPEN TO ALL)

A J Barnes	Bloomington	McLean
F B Schattgen	Jerseyville	Jersey
Wm Stocking	Rochelle	Ogle

LOT 8—CAR LOADS

A J Barnes	Bloomington	McLean
Wm Stocking	Rochelle	Ogle
F B Schattgen	Jerseyville	Jersey
P W Slaughter	Canton	Fulton
C W Wiese	Gilman	Iroquois
J D Dallenbach	Champaign	Champaign
J L Briggs	Downer's Grove	DuPage
James Peltz	Polo	Ogle
John G Imboden	Decatur	Macon

CLASS C—SHEEP.

LOT 9—LONG WOOLS. LOT 10—MIDDLE WOOLS. LOT 11—FINE WOOLS. LOT 12 GRADES OR CROSSES

A. J. Barnes	Bloomington	McLean
F B Schattgen	Jerseyville	Jersey
P. W. Slaughter	Canton	Fulton

LOT 13—SWEEPSTAKES

(OPEN TO ALL)

Joseph Murphy	Alton	Madison
J F Briggs	Downer's Grove	DuPage
James Peltz	Polo	Ogle

LOT 14—GRAND SWEEPSTAKES

(OPEN TO ALL.)

C W Wiese	Gilman	Iroquois
J Dallenbach	Champaign	Champaign
J G Imboden	Decatur	Macon
J F Briggs	Downer's Grove	DuPage
James Peltz	Polo	Ogle

CLASS D—SWINE

LOT 15—LARGE PURE BREEDS POLAND CHINA BERKSHIRE, CHESTER WHITE, ETC LOT 16—SMALL PURE BREEDS SUFFOLKS, ESSEX SHORT-FACED LANCASHIRE, ETC LOT 17—GRADES OR CROSSES

James Peltz	Polo	Ogle
F B Schattgen	Jerseyville	Jersey
P W Slaughter	Canton	Fulton

LOT 18—SWEEPSTAKES

(OPEN TO ALL)

A J Barnes	Bloomington	McLean
J F Briggs	Downer s Grove	DuPage
Joseph Murphy	Alton	Madison

LOT 19—GRAND SWEEPSTAKES

(OPEN TO ALL)

J T Bulstein	Allegany	Allegany
William Stocking	Rochelle	Ogle
J H Spears	Tallula	Menard

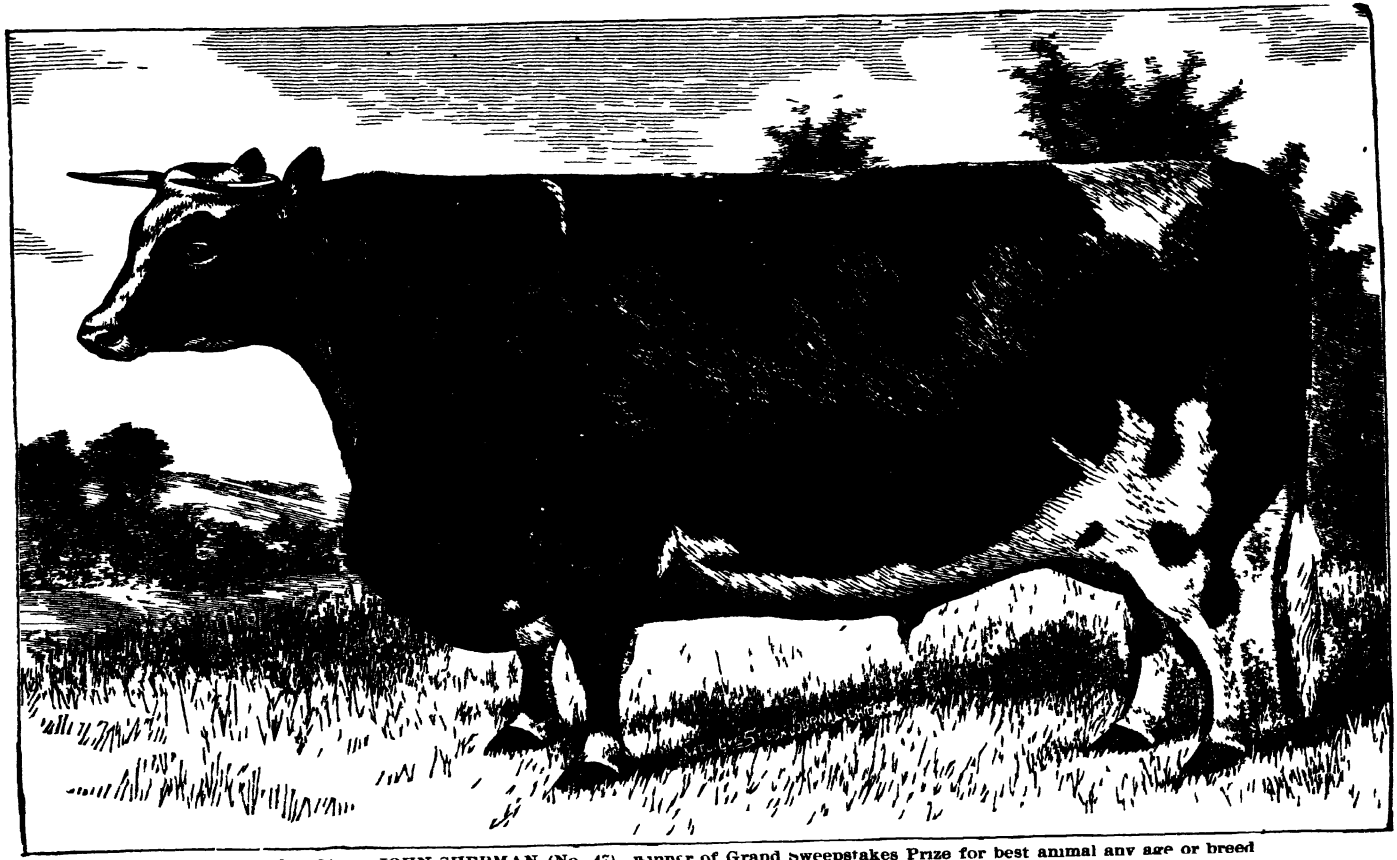
CLASS E—POULTRY.

LOT 20—FAT POULTRY LOT 21—WILD GAME

C J Ward	Chicago	Cook

COMMITTEE ON MEASUREMENT.

Wm Cassidy	..	St Louis, Missouri
J H Potts		Jacksonville
H J Pauly		Plattsburg, Missouri
J H Pickrell		Harristown.... . .....



Grand Sweepstakes Steer, JOHN SHERMAN (No 47) winner of Grand Sweepstakes Prize for best animal any age or breed

BREEDING OF ANIMALS EXHIBITED.

CLASS A—CATTLE.

SAMUEL DYSART, *Superintendent.*

LOT 1—SHORTHORNS—THOROUGHBRED

Steers four years old and over - 2 entries.

1 Young Mary, steer, No 1, exhibited by VanMeter & Hamilton Winchester, Ky. Bred by B F VanMeter. Dropped September 18, 1873 Sire, Rosybuck; dam, Red Rose 11th

2. Young Mary, steer, No 2, exhibited by VanMeter & Hamilton, Winchester, Ky. Bred by B. F. VanMeter Dropped October 10, 1873. Sire, Rosybuck; dam, Red Rose 10th.

Steers three years old and under four years—2 entries:

3 Young Mary, steer, No 5, exhibited by VanMeter & Hamilton Winchester, Ky Bred by J C & Geo Hamilton Dropped June 2, 1875 Sire, Duke of Noxubee 3,492½; dam, Lu Josephene.

4 Young Mary, steer, No 6, exhibited by VanMeter & Hamilton, Winchester, Ky Bred by J C & Geo Hamilton Dropped August 1, 1875 Sire, Duke of Noxubee 3,492½; dam, Red Josephene.

Steers two years old and under three years—5 entries:

5. Tom Booth, exhibited and bred by J N Brown's Sons, Berlin Dropped October 11, 1876 Sire, Oxford Bates 24,210; dam, Empress. [p 576, vol. 13, A. S H R]

6 Young Mary, steer, No 8, exhibited by VanMeter & Hamilton, Winchester, Ky Bred by J C & Geo Hamilton Dropped December 15, 1875 Sire, Duke of Noxubee 3,492½; dam, 3d Belle of Bath

7 Raleigh, exhibited and bred by H C Nelson, Canton Dropped March 30, 1876 Sire, The Cardinal 18 430; dam, Airdirenne 2d

8 Cash, exhibited and bred by H C Nelson, Canton Dropped April 8, 1876 Sire, Lord Scattergood [vol 13, A S H R]; dam, Vennessa

9 Humphrey, exhibited and bred by H C. Nelson Canton Dropped July 30, 1876 Sire, Bob McGroby 9,542; dam, Molie Veach

Cows three years old or over - 6 entries:

10 Illustrious 8th, exhibited and bred by J N Brown's Sons, Berlin. Dropped September 2, 1875 Sire Kessinger's Breastplate 17,476; dam, Illustrious 3d [p 666, vol 9, A S H R]

11. Crevola 2d, exhibited by VanMeter & Hamilton, Winchester, Ky. Bred by Sheld & VanSickle Dropped April 2, 1871 Sire, 2d Earl of Oxford 3,547; dam, Constantia

12 Mayflower 5th, exhibited by VanMeter & Hamilton, Winchester Ky Bred by A. Rennick Dropped July 24, 1864 Sire, Audric 643; dam, Mayflower 1st.

13 Superior 8th, exhibited by J Baugh & Sons, Farmers' Institute, Indiana Bred by Harvey Sadowsky Dropped March 18, 1874. Sire, 1st Duke of Vermilion 11,202; dam, Superior 7th.

14. Lida Nelson, exhibited and bred by H C. Nelson, Canton Dropped March 16, 1872 Sire, Laudable 5,870; dam, Eliza

15. Louan of Riverview, exhibited by Emory Cobb, Kankakee Bred by J G. Taylor. Dropped May 14, 1867 Sire, 11th Duke of Airdrie; dam, Louan 20th.

Steers one and under two years old—3 entries:

16 Challenger, exhibited and bred by J N Brown's Sons, Berlin Dropped January 6, 1877. Sire, Oxford Bates 24,210; dam, Mollie Graham. [p. 819, vol. 13, A. S. H. R]

17. Duke of Sangamon, exhibited and bred by J N Brown's Sons, Berlin. Dropped February 21, ,1877 Sire, .Oxford Bates 24,210; dam, Countess Oxford4th [p 493, vol. 15, A. S H. R]

18 General Shields, exhibited and bred by J N Brown's Sons, Berlin Dropped February 1, 1877 Sire, Summit Airdrie 12,997; dam, Snowball [p 557, vol 7, A. S H. R.]

LOT 2—HEREFORD THOROUGHBREDS

Steers four years old or over—1 entry:

19. Hereford steer, exhibited by T L Miller, Beecher Bred by John Muynan. Dropped July 21, 1871 Sire, Sir Richard 2d; dam, Jennie Clark

Steers three years old and under four years—3 entries.

20. Hereford steer, exhibited by T L Miller, Beecher Bred by John Muynan. Dropped April 7, 1875 Sire, Sir Richard 2d; dam, Jennie Clark

21. Blake, exhibited by Wm Powell, Beecher Bred by W P Blake Dropped March 18, 1875, Sire, Romeo; dam, Stately 2d

22. Hubbard, exhibited by Wm Powell, Beecher Bred by W P Blake Dropped March 26, 1875 Sire Romeo; dam, Verbena 4th.

Steers two years old and under three years—1 entry:

23 Hereford steer, exhibited by T L Miller, Beecher Bred by John Muynan Dropped December 19, 1875 Sire, Sir Richard 2d; dam, Jennie Clark.

Cows three years old or over 3 entries·

24 Jennie, exhibited by T L Miller, Beecher Bred by J Holtozlande Dropped May 1, 1874 Sire, Sir Arthur; dam, Favorite

25 Violet, exhibited by T L. Miller, Beecher Bred by J. Humphries Dropped May 5, 1871 Sire, Northern Star, 4,811; dam, Adelaide

26 Marrilla, exhibited and bred by Wm Powell, Beecher. Dropped March 12, 1873. Sire, Sir Charles, 3,434; dam, Countess.

Steers one year old and under two years—no entry.

LOT 3—DEVONS--THOROUGHBREDS

Steers four years old or over- 2 entries.

27 May Boy, exhibited and bred by Sanford Saun, Kingston Station Dropped May 20, 1874 Sire, Shelto; dam, Fancy

28 May Duke, exhibited and bred by Sanford Saun, Kingston Station Dropped May 26, 1874 Sire, Shelto, dam, Lady May

Steers three years old and under four years—no entries:

Steers two years old and under three years 2 entries:

29 Postman, exhibited and bred by Thomas Bidwell, Gurnee Dropped March 3, 1875 Sire, Young Lord Postman 3d, dam, Frelina, 487

30. Comet, exhibited and bred by Thomas Bidwell, Gurnee. Dropped June 15, 1875. Sire, Comet, 805; dam Cherry 3d, 862

Steers one year old and under two years—no entry:

Cow three years old or over—one entry:

31. Queen, exhibited and bred by W T Smith, Elkhorn, Wis Dropped September 15, 1873. Sire, May Boy, 602; dam, Roxalinda, 700

LOT 4—OTHER PURE BREEDS NOT NAMED.

NO ENTRY.

LOT 5—GRADES AND CROSSES

Steers four years old or over—twelve entries:

32. Grade shorthorn, exhibited and bred by Charles Millar, Williamsville Dropped January 1, 1873 Sire, shorthorn bull; dam, ½ grade shorthorn cow.

33. Grade shorthorn, exhibited by H. A. Whitnah, Canton. Bred by John Kelly. Dropped March 15, 1874. Sire, shorthorn bull; dam, ¾ grade shorthorn cow.

34. Grade shorthorn, Gov. Morton, exhibited and bred by Geo. Gray, Sr., Rushville, Ind. Dropped May 10, 1873. Sire shorthorn bull; dam, high grade shorthorn cow.

35. Grade shorthorn Hoosier Boy, exhibited and bred by George Gray, Sr., Rushville, Ind. Dropped May 25, 1874. Sire, shorthorn bull; dam, high grade shorthorn cow

36. Grade shorthorn, exhibited by J. D Gillett Bred by Mr. Lawrence. Dropped April 15, 1874. Sire, shorthorn bull; dam, ½ grade shorthorn cow.

37 Grade shorthorn, exhibited by VanMeter & Hamilton, Winchester, Ky. Bred by Mr. Goodman Dropped May 15, 1874 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

38 Grade shorthorn, exhibited by VanMeter & Hamilton, Winchester, Ky. Bred by Mr. Goodman Dropped February 15, 1874 Sire, shorthorn bull; dam, three-quarter grade cow

39. Grade shorthorn, exhibited by VanMeter & Hamilton Winchester, Ky Bred by Moses Randolph Dropped April 15, 1874 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

40. Grade shorthorn, exhibited by VanMeter & Hamilton, Winchester, Ky Bred by ———— Dropped April 15, 1874 Sire, shorthorn bull; dam, three quarter grade shorthorn cow

41 Grade shorthorn, Horace Greeley, exhibited by D M Moninger, Albion, Iowa Bred by Abram Mann Dropped April 15, 1873 Sire, shorthorn bull; dam, seven-eighth grade shorthorn cow

42 Grade shorthorn, Lexington, exhibited by D M Moninger Albion, Iowa Bred by Abram Mann. Dropped April 15, 1873 Sire, shorthorn bull, dam, seven-eighth grade shorthorn cow

43 Grade Hereford steer, exhibited by T L Miller, Beecher Bred by A. H Seabury Dropped July 15, 1874 Sire, Hereford bull, Dalesmon, 4,497; dam, native cow

Steers three year old and under four years -10 entries;

44. Grade shorthorn, Chub, exhibited by J D Gillett, Elkhart Bred by Mr McCue Dropped April 15, 1875 Sire, shorthorn bull; dam, one-half grade shorthorn cow.

45 Grade shorthorn, exhibited and bred by John Fisher, Canton. Dropped May 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

46. Grade Hereford, exhibited by T L Miller Beecher Bred by A H Seabury Dropped December 25, 1874 Sire, Hereford bull, Dalesmon 4,497; dam, native cow.

47. Grade shorthorn, John Sherman, exhibited and bred by John D Gillett, Elkhart Dropped April 15, 1875 Sire, shorthorn bull; dam, one-half grade shorthorn cow

48 Grade shorthorn, Bob, exhibited and bred by John D Gillett, Elkhart Dropped April 15, 1875. Sire, shorthorn bull: dam, one-half grade shorthorn cow

49 Grade shorthorn, exhibited by VanMeter & Hamilton, Winchester Ky Bred by A. H. Brand Dropped May 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

50 Grade shorthorn, Bud Pauly, exhibited by H J Pauly, Plattsburg, Mo Bred by S Martin Dropped September 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

51. Grade shorthorn, Bill Atchison, exhibited by H J Pauly, Plattsburg, Mo Bred by B Shaver Dropped July 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

52. Grade shorthorn, John Call, exhibited by H J Pauly, Plattsburg, Mo Bred by Wm Willis Dropped June 15, 1875 Sire, shorthorn bull; dam, two third grade shorthorn cow

53 Grade shorthorn, Hulbert, exhibited and bred by John D Gillett, Elkhart, Dropped June 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

Steers two years old and under three years—11 entries:

54. Hereford grade steer, exhibited by T L Miller, Beecher, Illinois. Dropped May 15, 1876. Sire, Hereford bull, Mechanic; dam, native cow.

55. *Hereford grade steer, exhibited by T. L. Miller, Beecher. Bred by G. S. Burleigh.* Dropped April 15, 1876. Sire, Hereford bull, Oxford 854; dam, native cow.

56. Grade shorthorn, Solid, exhibited and bred by H C Nelson, Canton. Dropped April 13, 1876. Sire, shorthorn bull, Lord Scattergood [vol 13, A. S H R.]; dam, fifteen-sixteenth grade shorthorn cow, Beauty 1st

57. Grade shorthorn, Square All, exhibited and bred by H. C Nelson, Canton Dropped April 15, 1876. Sire, Lord Scattergood [vol 13, A. S H R.]; dam, fifteen-sixteenths grade shorthorn cow, Beauty 2d.

58. Grade shorthorn, Dumty, exhibited and bred by H C Nelson, Canton Dropped May 1, 1876. Sire, Lord Scattergood; dam, fifteen-sixteenths grade shorthorn cow, Juliette.

59. Grade shorthorn, Perfection, exhibited and bred by H C Nelson, Canton Dropped April 7, 1876. Sire, Lord Scattergood; dam, fifteen-sixteenths grade shorthorn cow, Spotette.

60. Grade shorthorn, exhibited and bred by John D. Gillett, Elkhart Dropped April 15, 1876. Sire, shorthorn bull; dam, three-quarter grade shorthorn cow.

61. Grade shorthorn, exhibited and bred by J D Gillett, Elkhart Dropped April 15, 1876. Sire, shorthorn bull; dam, three-quarter grade shorthorn cow.

62. Grade shorthorn, Tom, exhibited by H J Pauly, Plattsburg, Mo Bred by T E. Turner. Dropped February 15, 1876 Sire, shorthorn bull, Vice Airdre 15,640; dam, three-quarter grade shorthorn cow

63. Grade shorthorn, exhibited and bred by J. D Gillett, Elkhart Dropped April 15, 1876 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

64. Grade shorthorn, exhibited and bred by J D Gillett, Elkhart Dropped April 15, 1876 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow.

Steers one year old and under two years—2 entries:

65. Grade shorthorn, exhibited and bred by J. D Gillett, Elkhart Dropped January 1, 1877. Sire, shorthorn bull; dam, three quarter grade shorthorn cow.

66 Grade shorthorn, exhibited and bred by J D Gillett, Elkhart Dropped February 15, 1877. Sire, shorthorn bull; dam, th ee-quarter grade shorthorn cow.

Cows three years old and over [No entry]

CAR LOADS.

67. Grade shorthorn, Bob Brown No 1, exhibited by Wm J. Pauly, Plattsburg, Mo. Bred by D Jones Dropped September 15, 1875. Sire, shorthorn bull, Silas Woodson; dam, three-quarter grade shorthorn cow

68. Grade shorthorn, Bob Brown, No 2 exhibited by Wm J Pauly, Plattsburg Mo Bred by R. C Brown Dropped June 15, 1876 Sire, shorthorn bull, St. Elmo; dam, three-quarter grade shorthorn cow

69 Grade shorthorn, Abe, exhibited by Wm J Pauly, Plattsburg, Mo Bred by J. A. Funkhouser Dropped December 15, 1875 Sire, shorthorn bull, Red Jacket; dam, three-quarter grade shorthorn cow

70 Grade shorthorn, Joe, exhibited by Wm J Pauly, Plattsburg, Mo. Bred by Joe Liggin Dropped March 15, 1876. Sire, shorthorn bull, Ensign; dam, three-quarter grade shorthorn cow.

71. Grade shorthorn, Hughes, exhibited by Wm J Pauly, Plattsburg, Mo. Bred by Poley Hughes. Dropped June 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

72. Grade shorthorn, George P., exhibited by Wm J Pauly, Plattsburg, Mo Bred by Mr Berry Dropped June 15, 1876 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow.

73. Grade shorthorn, Halligan, exhibited by John D Gillett, Elkhart. Bred by Mr Halligan Dropped April 15, 1874. Sire, shorthorn bull; dam, one-half grade shorthorn cow.

74. Grade shorthorn, McCue No 2, exhibited by John D Gillett, Elkhart. Bred by Mr McCue. Dropped April 15, 1875. Sire, shorthorn bull; dam, one-half grade shorthorn cow.

75. Grade shorthorn, McCue No. 3, exhibited by John D Gillett, Elkhart. Bred by Mr. McCue Dropped April 15, 1875. Sire, shorthorn bull; dam, one-half grade shorthorn cow

76 Grade shorthorn, exhibited and bred by J. D. Gillett, Elkhart. Dropped April 15 1875. Sire, shorthorn bull; dam, one-half grade shorthorn cow.

77 Grade shorthorn, exhibited and bred by J. D Gillett, Elkhart Dropped April 15, 1875 Sire, shorthorn bull; dam, one-half grade shorthorn cow

78 Grade shorthorn, exhibited and bred by John D Gillett, Elkhart. Dropped September 15, 1875. Sire, shorthorn bull; dam, two-third grade shorthorn cow

79. Grade shorthorn, bred and exhibited by John D Gillett, Elkhart. Dropped September 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

80 Grade shorthorn, bred and exhibited by J D Gillett, Elkhart Dropped September 15, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow.

81 Grade shorthorn, and bred exhibited by J D Gillett, Elkhart Dropped April 15, 1876. Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

82 Grade shorthorn, bred and exhibited by J. D Gillett Elkhart Dropped April 15, 1876 Sire, shorthorn bull; dam, three-quarter grade shorthorn cow

83. Grade shorthorn, exhibited and bred by J D Gillett, Elkhart Dropped April 5, 1875 Sire, shorthorn bull; dam, three-quarter grade shorthorne ow.

84. Young Mary steer, 3, exhibited by VanMeter & Hamilton, Winchester, Ky Bred by B F VanMeter Dropped April 21, 1874. Sire, Rosybuck 2,637; dam, Rosette.

CLASS C—SHEEP.

D W VITTUM, JR, *Superintendent.*

LOT 9—LONG WOOLS

Pen three Wethers, over one and under two years—1 entry:

85 Cotswolds, exhibited and bred by J. S Brown & Son, Decatur

Pen three Ewes, over three years old—3 entries:

86 Cotswolds, exhibited by John Snell's Sons, Edmonton, Ontario, Canada. Bred by T. Berridge, England; James Walker and Wm. Lane, North Leach, England

87 Cotswolds, exhibited and bred by John Snell's Sons, Edmonton, Canada, except one which was bred by T Berridge, England

88 Cotswolds, exhibited by Frank Willson, Jackson, Michigan Bred by R Swanwick, Cirencester, England

Pen three Ewes, two years old and under three years -1 entry:

89 Cotswolds, exhibited and bred by John Snell's Sons, Edmonton, Canada

Pen three Lambs, under one year old—2 entries.

90. Cotswolds, exhibited and bred by John Snell's Sons, Edmonton Canada

91. Cotswolds, exhibited and bred by John Snell's Sons, Edmonton, Canada.

LOT 10—MIDDLE WOOLS

NO ENTRY.

LOT 11—FINE WOOLS

NO ENTRY

LOT 12—GRADES AND CROSSES

NO ENTRY.

CLASS D—SWINE.

M T. STOOKEY, *Superintendent.*

LOT 15—LARGE BREEDS POLAND CHINA, BERKSHIRE, CHESTER WHITE, ETC.

Hog over two years old - four entries:

92. Poland, exhibited and bred by H C. Castle, Wilmington Farrowed August 20, 1875. Sire Jim Crow, Sr

93. Poland, Queen Bess, exhibited and bred by A L Miner, Momence. Farrowed June 20, 1872. Sire, Jim Crow; dam, Lady Violet.

94. Poland, Dove Eye, exhibited and bred by A L Miner, Momence. Farrowed April 3, 1872 Sire, Jim Crow; dam, Dinah.

95 Chester White, exhibited and bred by S H Todd, Wakeman, Ohio. Farrowed October 15, 1876 Sire, Billey; dam, Jenny 2d.

Hog, one and under two years—five entries:

96 Poland, Beauty of the West, bred and exhibited by B J. Orton, Cambridge. Farrowed April 10, 1877. Sire, Centennial; dam Pocahontas

97 Poland, bred and exhibited by H C Castle, Wilmington. Farrowed July 1, 1877. Sire, Jim Crow, Jr ; dam, Queen Elizabeth.

98. Poland, Jude, bred and exhibited by A L Miner, Momence Farrowed August 11, 1877 Sire, Black Tom 2d, ; dam, Queen Bess.

99 Berkshire Sow, exhibited by T L Miller, Beecher Bred by C S Dole, Crystal Lake Farrowed July 15, 1877 Sire, Sambo 4th; [1099 Am Berkshire Record] dam, Highland Queen.

100 Berkshire Sow, exhibited by T L. Miller, Beecher Bred by C S Dole, Crystal Lake Farrowed July 15, 1877 Sire, Sambo 4th, dam, Highland Queen

Pig six months old and under one year - 3 entries:

101 Poland Black Joe, bred and exhibited by B J Orton, Cambridge. Farrowed December 20, 1877 Sire, Young Centennial; dam, Lady Charmer

102 Poland, bred and exhibited by H. C. Castle Wilmington Farrowed February 15, 1878. Sire, Malton [203, Poland Record], dam, Jenny Lunn

103. Poland, bred and exhibited by H. C Castle, Wilmington,. Farrowed March 5, 1878 Sire, Hoosier Prince [205, Poland Record]; dam, Black Diamond

Pig under six months old—2 entries:

104 Poland Sow, Bess, bred and exhited by B J Orton, Cambridge Farrowed July 1, 1878. Sire, Young Centennial; dam, Octava

105 Poland, bred and exhibited by H C. Castle, Wilmington, Illinois.

LOT 16—SMALL BREEDS—SUFFOLKS, ESSEX, SHORT-FACED, LANCASHIRE, ETC

Hog one and under two years—1 entry.

106 Essex Sow, bred and exhibited by Frank Willson, Jackson, Mich Farrowed March 15, 1877.

LOT 17—GRADES OR CROSSES

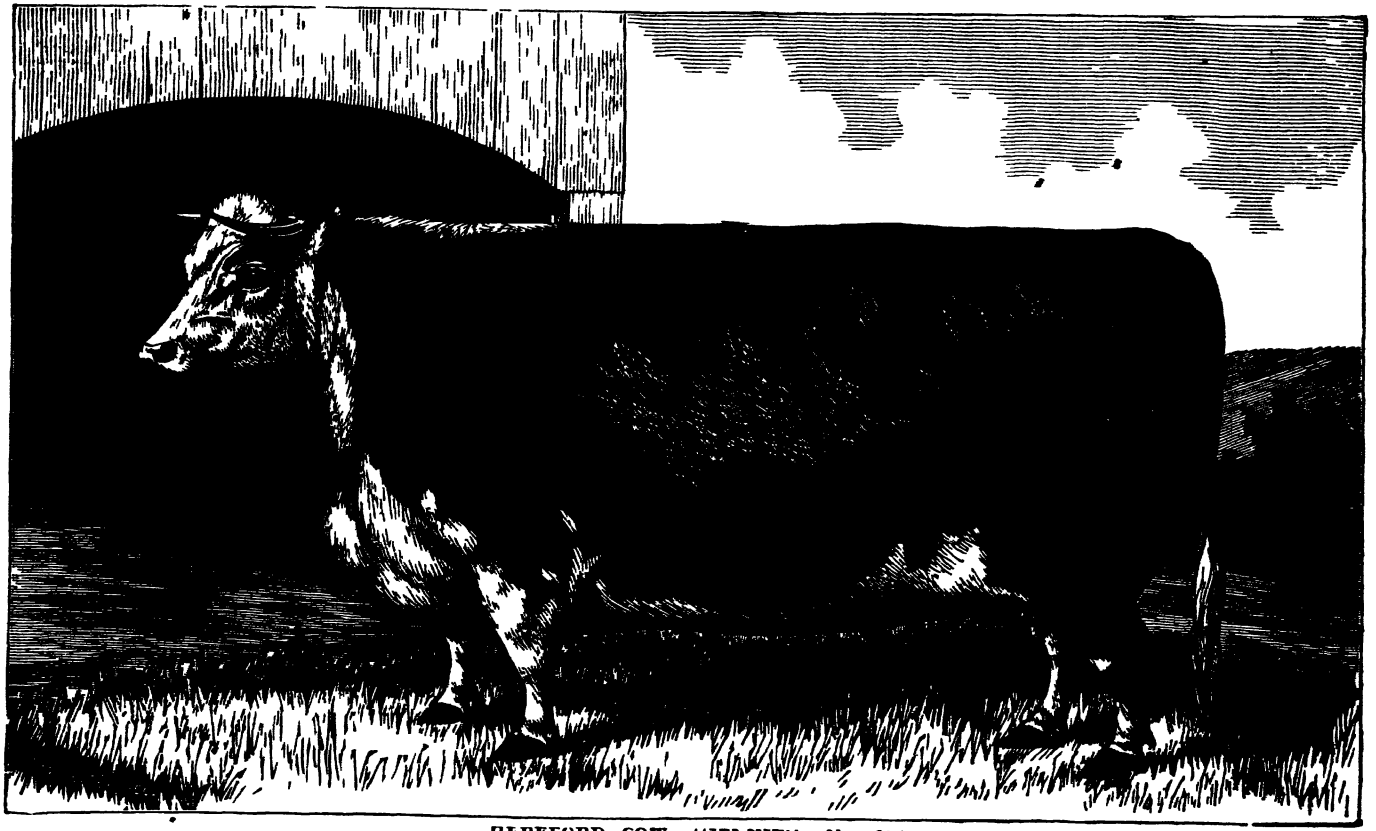
Hog one and under two years—1 entry:

107 Suffolk cross, Falstaff, bred and exhibited by Scheidt & Davis, Dyer, Indiana Farrowed September 20, 1877 Sire, Suffolk boar, Bismark; dam, Duchess Richton; cross of Chester White, Poland and Berkshire

Pig six months and under one year two entries:

108 Suffolk cross, bred and exhibited by Scheidt & Davis, Dyer, Indiana Farrowed February 19, 1878 Sire, Suffolk boar; dam, cross-bred sow

109 Suffolk cross, bred and exhibited by Scheidt & Davis, Dyer, Indiana. Farrowed February 19, 1878. Sire, Suffolk Boar; dam, cross-bred sow



HEREFORD COW "JENNIE"—(No 24)
Winner of sweepstakes cow of any age or breed, Exhibited by T L Miller, Beecher, Ill

TABLE OF WEIGHTS, MEASUREMENTS, ETC.

	No *	Date of Birth	Dec 2, 1878 Age in Days	Weight	Average gain per day since birth	Measurements. Length of carcass		Heart girth		Flank girth.		Height from ground. Top line Shoulder.		Hip.		Bottom line. Fore flank.		Flank.	
			No	Lbs	Lbs	Ft.	In	Ft	In	Ft	In.	Ft	In.	Ft	In.	Ft	In.	Ft.	In.
CLASS A—CATTLE																			
Lot 1—Shorthorns																			
Steers 4 years old or over																			
FIRST PREMIUM NO 2—SECOND PREMIUM NO 1																			
Young Mary, steer, 1st	1	September 18. 1873	1,902	2,440	1.28	6	2	9	..	9	7	5	..	5	1	1	9	2	1
Young Mary, steer, 2d	2	October 10 1873	1,880	2,085	1 11	5	11	8	4	8	7	4	9	4	9	1	7	1	11
Average			1,891	2,262	1 19	6	½	8	8	9	1	4	10	4	11	1	8	2	....
Steers 3 and under 4 years.																			
FIRST PREMIUM NO 3—SECOND PREMIUM NO 4																			
Young Mary, steer, 5th	3	June 2 1875	1,280	2,115	1 65	5	10	8	2	8	3	5	1	5	3	2	1	....	....
Young Mary, steer, 6th	4	August 1 1875	1,220	2,060	1 69	6	1	8	3	8	4	5	1	5	...	2	.	....	....
Average			1,250	2,087	1 67	5	11	8	2	8	3	5	1	5	1	2	....	....	...
Steers 2 and under 3 years																			
FIRST PREMIUM NO 8—SECOND PREMIUM NO 7																			
Tom Booth	5	October 11 .. 1876	783	1,585	2 02	5	4	7	4	7	6	4	7	4	9	2	....	2	....
Young Mary, steer, 8th	6	December 15 .1875	1,084	1,950	1 79	5	10	7	10	8	2	4	10	4	11	2	...	....	....
Raleigh	7	March 30 . 1876	978	1,600	1 64	5	5	7	7	8	...	4	10	4	10	2	1	....	....
Cash	8	April 8 .. 1876	969	1,705	1 76	5	6	7	7	7	10	4	8	4	9	1	11	....	....
Humpty	9	July 30 1876	856	1,265	1.47	5	..	7	1	7	3	4	5	4	5	1	11	..	....
Average		.....	934	1,621	1.73	5	5	7	6	7	9	4	8	4	9	1	11	2	....
Cows 3 years old or over.																			
FIRST PREMIUM NO 13—SECOND PREMIUM NO 10																			
Illustrious 8th	10	September 2. 1875	1,188	1,285	1.08	5	2	6	8	7	2	4	2	4	3	1	10	....	...
Crevola 2d	11	April 2 . 1871	2,802	1,890	67	6	...	7	4	8	6	4	6	4	9	1	11	....	....

*See "Breeding," pp. 72-77

TABLE WEIGHTS, MEASUREMENTS, ETC --Continued

	No	Date of birth.	Dec 2, 1878 Age in days	Dec 2, 1878 Weight	Average gain per day since birth.	Measurements. Length of carcass		Heart girth		Flank girth		Height from ground Top line. Shoulder		Hip.		Bottom line. Fore flank.		Flank.	
			No	Lbs	Lbs	Ft	In	Ft.	In	Ft.	In	Ft	In	Ft.	In	Ft.	In.	Ft.	In.
Mayflower, 5th	12	July 24, 1864	5.245	1 755	.33	5	11	7	10	8	2	4	8	4	10	1	11	....	...
Superior, 8th	13	March 18, 1874	1.721	2,075	1.20	6		8	6	8	10	4	6	4	11	1	11	....	....
Lida Nelson	14	March 16 1872	2.453	1 575	.64	5	8	7	1	7	11	4	5	4	6	1	10	....	....
Louan Riverview	15	May 14, 1867	4 216	1,760	41	6	3	7	5	8	1	4	7	4	9	1	10		....
Average			2,937	1.72	.72	5	10	7	6	8	1	4	6	4	8	1	10	....	....
Steers 1 and under 2 years.																			
FIRST PREMIUM NO. 17—SECOND PREMIUM NO 18																			
Challenger	16	January 6, 1877	696	1,400	2 01	5		7	...	7	3	4	7	4	7	2	..	....	...
Duke Sangamon	17	February 21, 1877	650	1,480	2.28	5	6	7	.	7	4	4	8	4	10	2	...	....	....
General Shields	18	February 1, 1877	670	1 275	1,90	5	2	6	8	6	9	4	4	4	5	1	10	..	...
Average			672	1,385	2 06	5	3	6	11	7	1	4	6	4	7	1	11	..	....
Lot 2—Hereford.																			
Steers 4 years old or over																			
Hereford steer	19	July 21, 1871	2,692	2,010	.75	6	6	7	11	8	2	4	10	4	10	1	10		....
Steers 3 and under 4 years																			
FIRST PREMIUM NO. 20—SECOND PREMIUM NO. 21																			
Hereford steer	20	April 7, 1875	1,336	1,705	1 20	6	2	7	5	7	9	4	6	4	7	1	10	...	....
Blake	21	March 18, 1875	1,356	1.760	1 29	6	2	7	7	7	7	4	8	4	8	2	....	...	....
Hubbard	22	March 26, 1875	1,348	1.740	1.29	6	4	7	3	7	7	4	7	4	8	2	....	....	....
Average			1,346	1,735	1 26	6	3	7	5	7	8	4	7	4	8	1	11	....	....
Steers 2 and under 3 years.																			
Hereford steer	23	December 19, 1875	1,080	1,470	1 36	5	10	7	...	7	2	4	6	4	7	1	11	....	....

Cows, 3 yrs old or over																				
FIRST PREMIUM NO 24--SECOND PREMIUM NO. 26																				
Jennie	24	May 1, 1874	1,677	1,595	95	5	7	7	9	8	1	4	2	4	3	1	7	...	....
Violet	25	May 5 1871	2,769	1,580	57	5	6	7	8	8	...	4	5	4	6	1	10	....	....
Marilla	26	March 12, 1873	2,092	1,715	82	6	2	7	6	8	1	4	4	4	6	1	9	...	..
Average	..	..	2,179	1,630	.78	5	9	7	8	8	1	4	4	4	5	1	9	....	....
Lot 3—Devons																			
Steers, 4 yrs old or over																			
FIRST PREMIUM NO 27—SECOND PREMIUM NO 28																			
May Boy	27	May 20, 1874	1,658	1,645	.99	5	8	8	..	8	.	4	8	4	9	1	10	...	....
May Duke	28	May 26, 1874	1 652	1 870	1 13	5	4	7	10	7	10	4	6	4	5	1	8	....	....
Average	...	...	1,655	1,757	1 06	5	6	7	11	7	11	4	7	4	7	1	9	..	....
Steers, 3 and under 4 yrs.																			
FIRST PREMIUM NO 29—SECOND PREMIUM NO 30																			
Postman	29	March 3, 1875	1 371	1 655	1 21	6	..	7	4	7	8	4	9	4	10	2	1	....	....
Comet	30	June .. 15, 1875	1,267	1,475	1 16	5	4	7	.	7	1	4	7	4	8	2	1	....	....
Average	....	....	1,319	1,565	1 18	5	8	7	2	7	4	4	8	4	9	2	1	....	....
Cow 3 yrs old or over																			
Queen	31	September 15, 1873	1,905	1,200	.63	.		....	..	..	..	...	...	....	...	..	.	..	....
Lot 5—Grades or crosses.																			
Steers, 4 yrs old or over.																			
FIRST PREMIUM NO 41—SECOND PREMIUM NO 34																			
Grade—Shorthorn	32	January 1, 1873	2,162	3,155	1 45	7	..	9	7	10	.	5	5	5	9	2	1	....	...
" Shorthorn	33	March 15, 1874	1,722	2,350	1 36	7	..	8	7	8	7	5	2	5	2	2	....	....	....
" Shorthorn	34	May 10 1873	2,033	2,830	1 39	6	9	9	...	9	5	5	4	5	5	2	1	...	....
" Shorthorn	35	May 25, 1874	1,653	2 550	1.54	6	6	8	10	9	..	5	3	5	2	1	11	....	....
" Shorthorn	36	April 15 1874	1,692	2,020	1 19	6	2	8	1	8	4	4	9	4	9	1	8	...	....
" Shorthorn	37	May 15 1874	1,663	2,605	1 56	7		8	10	9	..	5	7	5	8	2	3	...	....
" Shorthorn	38	February 15, 1874	1,752	2,650	1 51	7		8	10	9	..	5	3	5	5	2	1	...	....
" Shorthorn	39	April 15 1874	1,692	2,215	1.30	6	6	8	8	8	10	5	1	5	3	2	1	...	....
" Shorthorn	40	April 15, 1874	1,692	2,305	1 36	6	1	8	10	8	11	4	11	5	1	1	9	....	....
" Shorthorn	41	April 15, 1873	2,058	2,480	1 .0	6	5	8	11	8	11	5	2	5	2	2	..	....	....
" Shorthorn	42	April 15, 1873	2,058	2,750	1 33	6	10	9	1	9	4	5	6	5	6	2		....	....
" Hereford	43	July 15, 1874	1,602	1,980	1 23	5	10	8	..	8	3	4	11	4	11	1	11	...	....
Average	.	.	1,815	2,491	1 37	6	7	8	9	8	11	5	2	5	3	2		..	....
Steers 3 and under 4 yrs																			
FIRST PREMIUM NO. 47—SECOND PREMIUM NO 49																			
Grade—Shorthorn	44	April.. .. 15, 1875	1,328	2,005	1.51	5	9	8	8	8	4	4	8	4	9	1	9	....	...
" Shorthorn,	45	May 15, 1875	1,296	1,990	1 53	5	11	7	9	7	10	4	8	4	9	1	9	....	....

TABLE WEIGHTS, MEASUREMENTS, ETC —Continued

	No.	Date of birth	Dec. 2, 1878 Age in days	Weight	Average gain per day since birth	Measurements. Length of carcass		Heart girth		Flank girth.		Height from ground Top line. Shoulder.		Hip.		Bottom line. Fore flank		Flank.	
			No	Lbs	Lbs	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In.
Grade—Hereford	46	December 25 1874	1 4 9	1,905	1 32	6	.	8		8	..	4	8	4	7	1	8	..	...
" Shorthorn	47	April 15, 1875	1,328	2,185	1 65	6	2	8	7	9	.	4	9	4	8	1	7	..	...
" Shorthorn	48	April . 15, 1875	1,328	2,080	1 56	6	4	8	4	8	4	4	10	4	10	1	10	...	....
" Shorthorn.	49	May 15, 1875	1,298	2,305	1.70	5	10	8	7	8	8	5		5	..	1	10	...	....
" Shorthorn	50	September 15, 1875	1.176	1,940	1 65	5	11	8	2	8	7	4	7	4	8	1	7	..	....
" Shorthorn	51	July. . .15 1875	1,236	1 95	1 57	5	11	8	6	8	1	4	8	4	8	1	7	...	...
" Shorthorn	52	June . 15, 1875	1,296	1,880	1 48	6	1	8	7	8	6	4	11	4	11	1	9	.	..
" Shorthorn	53	June 15. 1975	1,266	2,080	1.64	6	1	8	4	8	3	4	9	4	9	1	10	..	..
Average			1 296	2,032	1 56	6		8	6	8	4	4	8	4	9	1	9	..	.
Steers 2 and under 3 yrs																			
FIRST PREMIUM NO 64—SECOND PREMIUM NO 61.																			
Grade Hereford	54	May . 15, 1876	932	1,575	1 69	5	3	7	3	7	4	4	7	4	8	1	10	...	.
" Hereford	55	April . 15. 1876	962	1,545	1 60	5	3	7	6	7	4	4	6	4	8	1	9		..
" Shorthorn.	56	April 13, 1876	964	1,755	1 82	5	2	7	7	8	...	4	7	4	9	1	11	....	...
" Shorthorn	57	April 15. 1876	962	1,745	1 81	5	4	7	9	7	11	4	7	4	9	1	8	..	....
" Shorthorn	58	May 1, 1876	946	1,56	1 65	5	5	7	3	8	..	4	7	4	8	1	9	...	....
" Shorthorn	59	April . 7, 1876	970	1,485	1 53	5	2	7	4	7	10	4	5	4	7	1	10	...	....
" Shorthorn.	60	April .15, 1876	962	1,625	1 69	5	10	7	7	8	..	4	8	4	10	1	10	..	. ..
" Shorthorn	61	April 15, 1876	962	1,560	1 62	6		7	10	8	4	4	6	4	8	1	7	.	..
" Shorthorn	62	February .15 1876	1,022	1,685	1 64	5	4	7	8	8	.	4	7	4	8	1	10	....	....
" Shorthorn	63	April 15, 1876	962	1,730	1.80	5	6	7	4	7	4	4	5	4	5	1	9	...	. ..
" Shorthorn	64	April .. 15, 1876	962	1,885	1 96	5	8	7	5	8	2	4	9	4	9	1	10	....	....
Average			973	1,650	1 70	5	4	7	6	7	10	4	6	4	8	1	9	...	....
Steers 1 and under 2 yrs.																			
FIRST PREMIUM NO. 66—SECOND PREMIUM NO 65																			
Grade Shorthorn	65	January 1, 1877	701	1 520	2 17	..	.	...	..	.	...	...	...	...	...	....	.		....
" Shorthorn	66	February .5, 1877	656	1,420	2 15	.	..	..	.	.	...	..	.	.	. .	..	....	..	..
Average			678	1,470	2 16	..	.	..	....	....	...	....	...	..	....	....	..	....	..

Lot 6. Sweepstakes open to all Steers 4 yrs or over

PREMIUM, 1

Hereford	19	July	21,	1871	2 692	2,010	75	6	6	7	11	8	2	4	10	4	10	1	10	...	....
Grade--Hereford	43	July	15,	1874	1,602	1,980	1 23	5	10	8	..	8	3	4	11	4	11	1	11	....	..
" Shorthorn	41	April	15,	1873	2,058	2 480	1 20	6	5	8	11	8	11	5	2	5	2	2	....	...	....
" Shorthorn	42	April	15,	1873	2,058	2,750	1 33	6	10	9	1	9	4	5	6	5	6	2	...	..	....
" Shorthorn	32	January.	1,	1873	2,162	3,155	1 45	7	..	9	7	10	.	5	5	5	9	2	1	....	...
" Shorthorn	33	March	15,	1874	1,722	2,350	1 36	7	.	8	7	8	7	5	2	5	2	2	...	....	....
" Shorthorn	34	May	10	1873	2 033	2,830	1 39	6	9	9	.	9	5	5	4	5	5	2	1	....	....
" Shorthorn	35	May	25,	1874	1,653	2,550	1 54	6	6	8	10	9	..	5	3	5	2	1	11	....	...
Devon	28	May	28,	1874	1,652	1,870	1 13	5	4	7	10	7	10	4	6	4	5	1	8	....	....
Shorthorn	1	September	18,	1873	1,902	2,440	1 28	6	2	9	.	9	7	5	...	5	1	1	9	2	1
Shorthorn	2	October	10,	1873	1 880	2 085	1 11	5	11	8	4	8	7	4	9	4	9	1	7	1	11
Grade--Shorthorn	38	February	15,	1874	1,752	2,650	1 51	7		8	10	9	.	5	3	5	5	2	1	..	..
" Shorthorn	39	April	15	1874	1,632	2,215	1 30	6	6	8	8	8	10	5	1	5	3	2	1	...	...
" Shorthorn	40	April	15	1874	1 692	2 305	1 36	6	1	8	10	8	11	4	11	5	1	1	9	..	....
Average					1, 96	2,405	1 28	6	5	8	8	8	10	5	1	5	1	1	10	...	....

Steers 3 years old and under 4

PREMIUM, NO 47.

Grade--Shorthorn	44	April	15	1875	1,328	2,005	1 51	5	9	8	8	8	4	4	8	4	9	1	9	...	..
" Hereford	46	December	25,	1874	1 4 9	1,905	1 32	6	.	8	.	8		4	8	4	7	1	8	...	...
" Shorthorn	47	April	15	1875	1,328	2,185	1 65	6	2	8	7	9	.	4	9	4	8	1	7	...	..
" Shorthorn	48	April	15,	1875	1,328	2,080	1 6	6	4	8	4	8	4	4	10	4	10	1	10	...	....
" Shorthorn	49	May	15,	1875	1,298	2 305	1 70	5	10	8	7	8	8	5	..	5	...	1	10	...	...
" Shorthorn	50	September	15,	1875	1,176	1 940	1.65	5	11	8	2	8	7	4	7	4	8	1	7	...	...
" Shorthorn	51	July	15,	1875	1,236	1,950	1 57	5	11	8	6	8	1	4	8	4	8	1	7	..	....
" Shorthorn	52	June	15,	1875	1,266	1,880	1 48	6	1	8	7	8	6	4	11	4	11	1	9	....	.
Average					1,299	2,011	1 55	6	.	8	5	8	5	4	9	4	9	1	8	....	....

Steers 2 and under 3 years

PREMIUM, NO. 60

Shorthorn	5	October	11,	1876	783	1,585	2 02	5	4	7	4	7	6	4	7	4	9	2	..	2	....
Shorthorn	6	December	15,	1875	1,084	1,950	1 79	5	0	7	10	8	2	4	10	4	11	2	..	....	.
Shorthorn	7	March	30,	1876	978	1,600	1 64	5	5	7	7	8	..	4	10	4	10	2	1	..	...
Shorthorn	8	April	8,	1876	969	1,705	1 76	5	6	7	7	7	10	4	8	4	9	1	11	....	....
Shorthorn	9	July	30,	1876	856	1,265	1 47	5	..	7	1	7	3	4	5	4	5	1	11	. .	..
Grade--Hereford	54	May	15,	1876	932	1,575	1 69	5	3	7	3	7	4	4	7	4	8	1	10	.	...
" Hereford	55	April	15,	1876	962	1,545	1 60	5	3	7	6	7	4	4	6	4	8	1	9	....	....
" Shorthorn	56	April	13,	1876	964	1,755	1 82	5	2	7	7	8	..	4	7	4	9	1	11	..	.. .
" Shorthorn	60	April	15	1876	962	1 6 5	1 69	5	10	7	7	8	.	4	8	4	10	1	10	..	....
" Shorthorn	61	April	15,	1876	962	1,560	1 62	6	....	7	10	8	4	4	6	4	8	1	7	....	....
" Shorthorn	62	February	15,	1876	1,022	1,685	1 64	5	4	7	8	8	..	4	7	4	8	1	10	...	...
" Shorthorn	63	April	15,	1876	962	1,730	1 80	5	6	7	4	7	4	4	5	4	5	1	9	...	....
" Shorthorn	64	April	15,	1876	962	1,885	1.96	5	8	7	5	8	2	4	9	4	9	1	10	....	...
Average					935	1,651	1 73	5	5	7	6	7	9	4	7	4	8	1	10		

TABLE WEIGHTS, MEASUREMENTS, ETC --Continued

	No	Date of birth	Dec 1. 1878 Age in days	Dec 1. 1878 Weight	Average gain per day since birth	Measurements: Length of carcass		Heart girth		Flank girth		Height from ground: Top line. Shoulder		Hip.		Bottom line: Fore flank		Flank.	
			No	Lbs	Lbs	Ft	In	Ft	In	Ft	In.	Ft.	In	Ft.	In	Ft	In.	Ft	In
Steers 1 or under 2 years.																			
PREMIUM, NO 17																			
Shorthorn	16	June 6, 1877	696	1,400	2 01	5		7	..	7	3	4	7	4	7	2	...	...	
Shorthorn	17	February 21 1877	650	1,480	2 28	5	6	7	.	7	4	4	8	4	10	2	.	..	....
Shorthorn	18	February 1. 1877	670	1,275	1 90	5	2	6	8	6	9	4	4	4	5	1	10	...	..
Grade--Shorthorn	65	January 1 1877	701	1,520	2 17	..	.	.			.	.	...	..		.	..	...	....
" Shorthorn	66	February 15, 1877	656	1,420	2 15				..		..	..	..	.	.	.	..	....	....
Average			674	1,419	2 10	5	3	6	11	7	1	4	6	4	7	1	11	..	...
Cows 3 years old or over																			
PREMIUM NO 24																			
Shorthorn	10	September 2, 1 75	1,188	1,285	1 08	5	2	6	8	7	2	4	2	4	3	1	10	..	....
Shorthorn	11	April 2, 1871	2,802	1,890	67	6	..	7	4	8	6	4	6	4	9	1	11	.	...
Shorthorn	13	March . 18 1874	1,721	2,075	1 20	6		8	6	8	10	4	9	4	11	1	11		..
Shorthorn	15	May . 14, 1867	4,216	1,760	41	6	3	7	5	8	1	4	7	4	9	1	10	...	...
Hereford	24	May . 1, 1874	1,677	1,595	95	5	7	7	9	8	1	4	2	4	3	1	7	....	...
Hereford	26	March 12, 1873	2,092	1,715	82	6	2	7	6	8	1	4	4	4	6	1	9	...	...
Average			2,282	1,720	85	5	11	7	6	8	1	4	5	4	6	1	10	....	....
LOT 7--*Grand Sweepstakes, open to all.*																			
PREMIUM, NO 47.																			
Shorthorn steer	1	September 18, 1873	1,902	2,440	1 28	6	2	9		9	7	5	.	5	1	1	9	2	1
Shorthorn steer	2	October 10, 1873	1,880	2,085	1 11	5	11	8	4	8	7	4	9	4	9	1	7	1	11
Shorthorn cow	13	March 18, 1874	1,721	2,075	1 20	6		8	6	8	10	4	9	4	11	1	11	...	....
Hereford steer	20	April 7, 1875	1,396	1,705	1 20	6	2	7	5	7	9	4	6	4	7	1	10	...	....
Hereford cow	24	May 1, 1874	1,677	1,595	95	5	7	7	9	8	1	4	2	4	3	1	7	.	....
Hereford cow	26	March 12, 1873	2,092	1,715	82	6	2	7	6	8	1	4	4	4	6	1	9	..	...
Devon steer	28	May 26, 1874	1,652	1,87	1.13	5	4	7	10	7	10	4	6	4	5	1	8	...	...
Grade--Shorthorn steer	32	January . 1, 1873	2,162	3,155	1 45	7	...	9	7	10	..	5	5	5	9	2	1	...	..
" Shorthorn steer	34	May 10 1873	2,033	2,830	1 39	6	9	9		9	5	5	4	5	5	2	1	....	...
" Shorthorn steer	35	May ... 25 1874	1,653	2,550	1 54	6	6	8	10	9	..	5	3	5	2	1	11	..	. .
" Shorthorn steer	38	February .15, 1874	1,752	2,650	1 51	7	.	8	10	9		5	3	5	5	2	1	...	..
" Shorthorn steer	39	April 15, 1874	1,692	2,215	1 30	6	6	8	8	8	10	5	1	5	3	2	1	....	...

Grade—Shorthorn steer	41	April 15, 1873	2,058	2,480	1 20	6	5	8	11	8	11	5	2	5	2	2				
" Shorthorn steer	42	April 15, 1873	2,058	2,750	1 33	6	10	9	1	9	4	5	6	5	6	2				
" Herford steer	43	July 15, 1874	1,602	1,980	1 23	5	10	8		8	3	4	11	4	11	1	11			
" Shorthorn steer	47	April 15 1875	1,328	2,185	1 65	6	2	8	7	9		4	9	4	8	1	7			
" Shorthorn steer	49	May 15, 1875	1,298	2,305	1 70	5	10	8	7	8	8	5		5		1	10			
" Shorthorn steer	50	September 15 1875	1,176	1,940	1 65	5	11	8	2	8	7	4	7	4	8	1	7			
" Shorthorn steer	51	July 15, 1875	1 236	1,950	1 57	5	11	8	6	8	1	4	8	4	8	1	7			
" Shorthorn steer	52	June 15, 1875	1,266	1,880	1 48	6	1	8	7	8	6	4	11	4	11	1	9			
" Shorthorn steer	62	February 15 1876	1,022	1,685	1 64	5	4	7	8	8		4	7	4	8	1	10			
Average			1,647	2,192	1.35	6	2	8	5	8	8	4	10	4	11	1	9			
LOT 8 —*Car-loads, open to all. Ten steers 3 years old or over.*																				
FIRST PREMIUM																				
Grade—Shorthorn	36	April 15, 1874	1,692	2,020	1 19	6	2	8	1	8	4	4	9	4	9	1	8			
" Shorthorn	44	April 15, 1874	1,328	2,005	1 51	5	9	8	8	8	4	4	8	4	9	1	9			
" Shorthorn	47	April 15, 1875	1 328	2,185	1 65	6	2	8	7	9		4	9	4	8	1	7			
" Shorthorn	48	April 15, 1875	1 328	2,080	1 56	6	4	8	4	8	4	4	10	4	10	1	10			
" Shorthorn	53	June 15 1875	1,266	2 080	1 64	6	1	8	4	8	3	4	9	4	9	1	10			
" Shorthorn	74	April 15, 1875	1, 28	1,935	1 45															
" Shorthorn	75	April 15, 1875	1 328	2,000	1.50															
" Shorthorn	73	April 15, 1875	1,693	2,000	1 18															
" Shorthorn	76	April 15, 1875	1,328	2,000	1 50															
" Shorthorn	77	April... 15, 1875	1,328	2,170	1 63															
Average			1,394	2,047	1.48	6	1	8	5'	8	5	4	9	4	9	1	9			
Ten steers 2 and 3 years. SECOND PREMIUM																				
Grade—Shorthorn	60	April 15, 1876	962	1 625	1 69	5	10	7	7	8		4	8	4	10	1	10			
" Shorthorn	61	April 15, 1876	962	1,560	1 62	6		7	10	8	4	4	6	4	8	1	7			
" Shorthorn	63	April 15, 1876	962	1 730	1 80	5	6	7	4	7	4	4	5	4	5	1	9			
" Shorthorn	64	April 15, 1876	962	1,885	1 96	5	8	7	5'	8	2	4	9	4	9	1	10			
" Shorthorn	78	September 15 1875	1,175	1 712	1 45															
" Shorthorn	79	September 15, 1875	1,175	1,713	1 45															
" Shorthorn	80	September 15, 1876	1,175	1,755	1 45															
" Shorthorn	81	April 15, 1876	962	1 620	1 68															
" Shorthorn	82	April 15, 1876	962	1,490	1 59															
" Shorthorn	83	April 15, 1876	962	1.585	1 65															
Average			1,025	1,667	1 63	5	9	7	6	7	11	4	7	4	8	1	9			
Ten steers 2 and 3 years PREMIUM—SILVER MEDAL																				
Grade—Shorthorn	50	September 15, 1875	1,176	1,940	1 65	5	11	8	2	8	7	4	7	4	8	1	7			
" Shorthorn	51	July 15, 1875	1,236	1,950	1 57	5	11	8	6	8	1	4	8	4	8	1	7			
" Shorthorn	52	June 15, 1875	1,266	1 880	1 48	6	1	8	7	8	6	4	11	4	11	1	9			
" Shorthorn	62	February 15, 1876	1,022	1,685	1 64	5	4	7	8	8		4	7	4	8	1	10			
" Shorthorn	67	September 15 1875	1,175	1,865	1 59															
" Shorthorn	68	June 15, 1876	901	1,740	1 93															
" Shorthorn	69	December 15, 1875	1,084	1,695	1 56															

TABLE WEIGHTS, MEASUREMENTS, ETC.—Continued.

	No.	Date of Birth.	Dec. 2, 1878. Age in days	Dec. 2, 1878. Weight	Average gain per day since birth	Measurement. Length of carcass		Measurement. Heart girth		Measurement. Flank girth.		Height from ground. Top line. Shoulder		Height from ground. Top line. Hip.		Height from ground. Bottom line. Fore flank		Height from ground. Bottom line. Flank.	
			No	Lbs	Lbs	Ft	In.	Ft	In.	Ft	In	Ft	In	Ft	In	Ft.	In	Ft	In.
Grade—Shorthorn	70	March 15, 1876	900	1,500	1 51														
" Shorthorn	71	June 15 1875	1,267	1,885	1 50														
" Shorthorn	72	June 15, 1876	901	1,450	1 61														
Average			1,102	1,75)	1 60	5	9	8	3	8	3	4	8	4	9	1	8		
Ten steers, 3 years old or over. PREMIUM -SILVER MEDAL.																			
Shorthorn	1	Septem'r 18 1873	1,902	2,440	1 28	6	2	9		9	7	5		5	1	1	9	2	1
Shorthorn	2	October 10, 1873	1,880	2 085	1 11	5	11	8	4	8	7	4	9	4	9	1	7	1	11
Shorthorn	3	June 2, 1875	1,280	2,115	1 65	5	10	8	2	8	3	5	1	5	3	2	1		
Shorthorn	4	August 1, 1875	1,220	2,060	1 69	6	1	8	3	8	4	5	1	5		2			
Shorthorn	6	Decemb'r 15, 1875	1,084	1,950	1 79	5	10	7	10	8	2	4	10	4	11	2			
Grade—Shorthorn	37	May 15, 1874	1,663	2 605	1 56	7		8	10	9		5	7	5	8	2	3		
" Shorthorn	39	April 15, 1874	1 692	2 2 5	1 30	6	6	8	8	8	10	5	1	5	3	2	1		
" Shorthorn	40	April 15, 1874	1,692	2,305	1 36	6	1	8	10	8	11	4	11	5	1	1	9		
" Shorthorn	49	May 15, 1875	1,298	2,305	1 70	5	10	8	7	8	8	5		5		1	10		
Shorthorn	84	April 21, 1874	1,687	2,370	1 40														
Average			1,539	2,245	1 48	6	1	8	6	8	7	5		5	1	1	10		
COMPARISON OF BREEDS—RINGS OF THE SEVERAL BREEDS OF CATTLE COMPARED																			
Steers 4 years old or over.	Lot																		
Shorthorns, average	1	2 head	1,891	2,262	1 19	6	½	8	8	9	1	4	10	4	11	1	8	2	
Hereford, "	2	1 "	2,692	2,010	75	6	6	7	11	8	2	4	10	4	10	1	10		
Devon "	3	2 "	1,655	1,757	1 06	5	6	7	11	7	11	4	7	4	7	1	9		
Grades or crosses	5	12 "	1,815	2,491	1.54	6	7	8	9	8	11	5	2	5	3	2			
Average			2,013	2,130	1 13	6	2	8	4	8	6	4	10	4	11	1	10		
Steers 3 and under 4 years																			
Shorthorn, average	1	2 head	1,250	2,087	1 67	5	11	8	2	8	3	5	1	5	1	2			
Herford, "	2	3 "	1,346	1,735	1 26	6	2	7	5	7	8	4	7	4	8	1	11		
Devon, "	3	2 "	1,319	1 565	1 18	5	8	7	2	7	4	4	8	4	9	2	1		

Grades or crosses	5 10 head.	1,296	2,032	1 56	6	..	8	6	8	4	4	8	4	9	1	9	..	....
Average		1,303	1,855	1 42	5	11	7	10	7	10	4	9	4	10	1	11	....	...
Steers 2 and under 3 years																		
Shorthorn average	1 5 head	934	1 621	1 73	5	5	7	6	7	9	4	8	4	9	1	11	2	....
Hereford "	2 1 "	1,080	1,470	1 36	5	10	7	..	7	2	4	6	4	7	1	11	..	..
Devon "	3 None																....	...
Grades or crosses	5 11 head	973	1,650	1 70	5	4	7	6	7	10	4	6	4	8	1	9	...	....
Average		999	1,580	1 59	5	6	7	4	7	7	4	7	..	8	1	10	...	.
Steers 1 and under 2 years																		
Shorthorn average	1 3 head	672	1 385	2 06	5	3	6	11	7	1	4	6	4	7	1	11	...	....
Hereford "	2 None																..	..
Devon "	3 None																...	...
Grades or crosses	5 2 head	678	1,480	2 16													...	..
Average		675	1,432	2 11				..					..				...	..
Cows 3 years or over																		
Shorthorn average	1 6 head	2,937	1,723	72	5	10	7	6	8	1	4	6	4	8	1	10	.	...
Hereford "	2 3 "	2,179	1 630	78	5	9	7	8	8	1	4	4	4	5	1	9	..	...
Devon "	3 1 "	1,905	1,200	63									...		...	..	.	..
Grades or crosses	5 None																	...
Average		2,340	1 517	71	5	9	7	7	8	1	4	5	4	6	1	9	.	..
COMPARISON—FIRST PRIZE WINNERS OF THE SEVERAL BREEDS OF CATTLE																		
Steers 4 years old or over.																		
	No																	
Shorthorn	2 October. 10, 1873	1,880	2,085	1 11	5	11	8	4	8	7	4	9	4	9	1	7	1	11
Hereford	19 July 21, 1874	2,692	2,010	75	6	6	7	11	8	2	4	10	4	10	1	10	.	....
Devon	27 May .20 1871	1,658	1,645	99	5	8	3		8	.	4	9	4	9	1	10	..	...
Grades or crosses	41 April 15 1873	,058	2 480	1 20	6	5	8	11	8	11	5	2	5	2	2		..	...
Average	.. ..	2,072	2,055	1 01	6	1	8	1	8	5	4	10	4	10	1	10	.	..
Steers 3 and under 4 years																		
Shorthorn	5 [illegible] 2 1875	1,280	2,115	1 65	5	10	8	2	8	3	5	1	5	3	2	1	.	...
Hereford	20 April .. 7, 18 5	1,336	1,705	1 20	6	2	7	5	7	9	4	6	4	7	1	10	..	...
Devon	29 March 3, 1875	1,371	1,655	1 21	6		7	4	7	8	4	9	4	10	2	1		...
Grades or crosses	47 April 15, 1875	1,328	2,185	1 65	6	2	8	7	9	.	4	9	4	8	1	7	..	..
Average		1,329	1,915	1.43	6		7	10	8	2	4	9	4	10	1	10	.	...
Steers 2 and under 3 years																		
Shorthorn	8 April 8 1876	969	1,705	1 76	5	6	7	7	7	10	4	8	4	9	1	11		..
Hereford	23 December 19, 1875	1 080	1,470	1 36	5	10	7	.	7	2	4	6	4	7	1	11		...
Devon	.. ....	..	.	.	.	.	.	.	.	.	.	.	.	..		.	....	...

TABLE WEIGHTS, MEASUREMENTS, ETC.--Continued

	No	Date of birth.	Dec 2, 1878 Age in days.	Dec 2, 1878 Weight	Average gain per day since birth	Measurements Length of carcass		Heart girth		Flank girth		Height from ground. Top line. Shoulder.		Hip.		Bottom line. Fore flank		Flank.	
			No.	Poun's	Lbs	Ft	In	Ft.	In	Ft	In.	Ft	In.	Ft.	In	Ft	In	Ft.	In.
Grades or crosses	64	April 15, 1876	962	1 885	1 96	5	8	7	5	8	2	4	9	4	9	1	10	..	...
Average			1,003	1,686	1 69	5	8	7	4	7	8	4	8	4	8	1	11	..	...
Steers 1 and under 2 years.																			
Shorthorn	17	February 21, 1877	650	1,480	2 28	5	6	7		7	4	4	8	4	10	2	..	..	....
Hereford																			
Devon																			
Grades or crosses	66	February 15, 1877	656	1,420	2 15														
Average			653	1,450	2 22														
Cows 3 years old or over.																			
Shorthorn	13	March 18, 1874	1,721	2,075	1 20	6		8	6	8	10	4	9	4	11	1	11	..	....
Hereford	24	May 1, 1874	1,677	1,595	95	5	7	7	9	8	1	4	2	4	3	1	7	...	...
Devon																			
Grades or crosses																			
Average			1,699	1,835	1.07	5	9	8	1	8	5	4	5	4	7	1	9	....	....
CLASS C--SHEEP.																			
Lot 9—Long Wools. *Pen, three Wethers over one and under two years*																			
Cotswold	85	January 1877	....	220	..	3		5	1	5	.	3	4	2	6	1	1	...	....
"	85	March 1877		220		3	1	5	2	5	..	2	4	2	6	1	1	....	...
"	85	April 1877		234		3	3	5	9	5	2	2	4	2	5	1	1		....
Average				224		3	1	5	4	5	1	2	4	2	6	1	1	....	....
Pen, three Ewes over three years old																			
Cotswold	86	Spring 1873		313															
"	86	Spring 1873		295															
"	86	Spring 1873		330	..	3	1	5	6	5	4	2	5	2	7	1	....	..	....
Average				312	..	3	1	5	6	5	4	2	5	2	7	1	....	....	

Cotswold	87															
"	87															
"	87															
Average				3		4	5	4	3	2	5	2	7	1	1	
				3		4	5	4	3	2	5	2	7	1	1	
Cotswold	88	February	1875													
"	88	February	1875													
"	88	February	1874													
Average																
Pen, 3 Ewes, two and under three years.																
Cotswold	89															
"	89			3	2	5	10	5	10	2	9	2	11	1		
"	89															
Average				3	2	5	10	5	10	2	9	2	11	1		
Pen, 3 Lambs under one year																
Cotswold	90	March	15, 1878													152
"	90	March	1878													138
"	90	March	1878													140
Average																143
Cotswold	91															140
"	91															160
"	91															151
Average																117
Lot 13—Sweepstakes.																
Pen, 3 Wethers, one and under two years																
Cotswold	95	January	1877													220
"	95	March	1877													220
"	95	April	1877													234
Average				3	1	5	4	5	1	2	4	2	6	1	1	224
Pen, 3 Ewes, over three years.																
Cotswold	87															278
"	87															274
"	87			3		4	5	4	3	2	5	2	7	1	1	283
Average				3		4	5	4	3	2	5	2	7	1	1	278
Cotswold	86															313
"	86															305
"	86			3	1	5	6	5	4	2	5	2	7	1		
Average				3	1	5	6	5	4	2	5	2	7	1		

TABLE WEIGHTS, MEASUREMENTS, ETC —Continued

	No	Date of birth	Dec 2 1878 Age in days	Dec 2 1878 Weight	Average gain per day since birth	Measurements: Length of carcass		Heart girth		Flank girth		Height from ground: Top line: Shoulder		Hip		Bottom line: Fore flank		Flank	
			No	Pounds	Lbs	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In.
Cotswold	88	February 1875		301															
"	88	February 15 1875		298															
"	88	February 15 1874		335															
Average				311															
Pen 3 Ewes, two and under three years																			
Cotswold	89			324															
"	89			339		3	2	5	10	5	10	2	9	2	11	1			
"	89			315															
Average				326		3	2	5	10	5	10	2	9	2	11	1			
Pen 3 Lambs under one year																			
Cotswold	90	March 1878		152															
"	90	March 1878		135															
"	90	March 1878		140															
Average				143															
Cotswold	91			140															
"	91			160															
"	91			151															
Average				15															
Lot 14—Grand Sweepstakes																			
Cotswold	85	January 15 1877		220		3		5	1	5		2	4	2	6	1	1		
"	85	March 15 1877		220		3	1	5	2	5		2	4	2	6	1	1		
"	85	April 15 1877		234		3	3	5	9	5	2	2	4	2	5	1	1		
Average				224		3	1	5	4	5	1	2	4	2	6	1	1		
CLASS D—SWINE																			
Lot 15—Large Breeds Poland China Berkshire, Chester White etc Hogs over two years old																			

Poland	92 August	20,	1875	1,201	651	.54	4	...	5	2	4	10	2	2	2	2	...	8	...	...
Poland	93 June	20,	1872	2,357	592	25	4	7	6	...	6	...	2	4	2	8	...	7	...	...
Poland	94 April	3,	1872	2,435	563	23	4	9	5	11	5	11	2	7	2	10	...	9	...	...
Chester White	95 October	15,	1876	779	644	82	4	5	6	4	6	1	2	7	2	7	...	9	...	...
Average				1,693	612	41	4	5	5	10	5	8	2	5	2	7	...	8	...	...
Hogs 1 and under 2 years																				
Poland	96 April	10,	1877	602	560	93	4	8	6	...	5	9	2	8	2	7	...	9	...	...
Poland	97 July	1,	1877	520	502	96	4	6	5	8	5	6	2	5	2	7	...	10	...	
Poland	98 August	11,	1877	479	442	92	4	5	5	4	5	3	2	4	2	6	...	7	...	...
Berkshire	99 July	15	1877	505	440	87	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Berkshire	100 July	15,	1877	505	464	91	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Average				522	481	91	4	6	5	6	5	4	2	4	2	6	...	8	...	...
Pigs 6 months and under 1 year.																				
Poland	101 December	20,	1877	348	446	1 28	4	1	5	9	5	7	2	2	2	2	...	8	...	...
Poland	102 February	15,	1878	291	363	1 25	4	9	6	2	6	4	2	8	2	9	...	9	...	...
Poland	103 March	5,	1878	273	3 0	1 21	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Average				304	379	1 25	4	5	5	11	6	1	2	5	2	5	...	8	...	...
Pigs under 6 months																				
Poland	104 July	1,	1878	15[illegible]	203	1 28	3	...	3	9	4	1	2	...	2	1	...	7	...	
Poland	105				182		3	2	4	2	4	...	1	9	1	11	...	6	...	...
Average					192		3	2	3	11	4	...	1	10	2	...	...	6	...	...
Lot 16 —Small Breeds, Suffolks, Essex etc. *Hogs 1 and under 2 years*																				
Essex	106 March	15	1877	627	470	.75	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lot 17 —Grades and Crosses *Hogs 1 and under 2 years.*																				
Suffolk cross	107 September	20,	1877	439	522	1 19	4	5	5	9	5	7	2	5	2	6	...	6	...	...
Pigs 6 months and under 1 year.																				
Suffolk cross	108 February	19,	1878	283	332	1 17	...	...	...	...	...	...	...	...	...	...	...	...	...	...
"	109 February	19,	1878	283	284	93	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Average				283	298	1.05	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lot 18 – Sweepstakes *Hogs over 2 years*																				
Poland	92 August	29,	1875	1,201	651	.54	4	...	5	2	4	10	2	2	2	2	...	8	...	...
Poland	93 June	20	1872	2,357	592	25	4	7	6	...	6	...	2	4	2	8	...	7	...	...
Poland	94 April	13,	1872	2,435	563	23	4	9	5	11	5	11	2	7	2	10	...	9	...	...
Chester White	95 October	15,	1876	779	644	.82	4	5	6	4	6	1	2	7	2	7	...	9	...	...
Average				1,693	612	.41	4	5	5	10	5	8	2	5	2	7	...	8	...	...
Hogs 1 and under 2 years.																				
Poland	96 April	10,	1877	603	560	93	4	8	6	...	5	9	2	8	2	7	...	9	...	...
Poland	97 July	1,	1887	520	502	96	4	6	5	8	5	6	2	5	2	7	...	10	...	...
Poland	98 August	11,	1877	479	442	92	4	5	5	4	5	3	2	4	2	6	...	7	...	...
Berkshire	99 July	15,	1877	505	440	.87	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE WEIGHTS, MEASUREMENTS, ETC —Continued

	No.	Date of birth	Dec 2, 1878 Age in days,	Dec 2, 1878 Weight	Average gain per day since birth	Measurements Length of carcass		Measurements Heart girth.		Measurements Flank girth		Height from ground Top line. Shoulder		Height from ground Top line. Hip		Height from ground Bottom line. Fore flank.		Height from ground Bottom line. Flank.	
			No.	Lbs	Lbs	Ft.	In	Ft	In	Ft.	In,	Ft	In.	Ft.	In	Ft.	In	Ft.	In.
Berkshire	100	July 15, 1877	505	464	91	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suffolk cross	107	September 20, 1877	439	522	1 19	4	5	5	9	5	7	2	5	2	6	..	6	..	..
Essex	106	March 15, 1877	627	470	.75	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Average			527	485	.93	4	6	5	8	5	6	2	5	2	6	..	8	..	..
Pig 6 months and under 1 year.																			
Poland	101	December 20, 1877	348	446	1 28	4	1	5	9	5	7	2	2	2	2	..	8	..	..
Poland	102	February 15, 1788	291	363	1 25	4	9	6	2	6	4	2	8	2	9	..	9	..	..
Poland	103	March 5, 1878	273	330	1 21	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suffolk cross	108	February 19, 1878	283	332	1 17	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suffolk cross	109	February 19, 1878	283	264	93	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Average			295	347	1 17	4	5	5	11	5	11	2	5	2	5	..	8	..	..
Pig under 6 months.																			
Poland	105	..	..	182	..	3	2	4	2	4	..	1	9	1	11	..	6	..	..
Lot 19 --Grand Sweepstakes open to all.																			
Poland	92	August 24 1875	1,201	651	54	4	..	5	2	4	10	2	2	2	2	..	8	..	..
Poland	87	July 1, 1877	520	502	.96	4	6	5	8	5	6	2	5	2	7	..	10	..	..
Poland	102	February 15 1878	291	363	1.25	4	9	6	2	6	4	2	8	2	9	..	9	..	..
Poland	103	March 5 1878	273	330	1 21	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Poland	105	...	..	182	..	3	2	4	2	4	..	1	9	1	11	..	6	..	..
Chester White	95	October. 15, 1876	779	644	82	4	5	6	4	6	1	2	7	2	7	..	9	..	..
Poland	101	December 20 1878	348	446	1 28	4	1	5	9	5	7	2	2	2	2	..	8	..	..
Poland	96	April 10, 1877	602	560	.93	4	8	6	..	5	9	2	8	2	7	..	9	..	..
Poland	104	July 1, 1878	158	203	1 28	3	..	3	9	4	1	2	..	2	1	..	7	..	..
Grade Suffolk	107	September 20, 1877	439	522	1.19	4	5	5	9	5	7	2	5	2	6	..	6	..	..
Poland	93	June 20 1872	2,357	592	25	4	7	6	..	6	..	2	4	2	8	..	7	..	..
Poland	94	April 13, 1872	2,434	563	23	4	9	5	11	5	11	2	4	2	10	..	9	..	..
Poland	98	April 11, 1877	479	442	92	4	5	5	4	5	3	2	4	2	6	..	7	..	..
Average			823	461	95	4	2	5	5	5	5	2	7	2	5	..	8	..	..

REPORTS OF AWARDING COMMITTEES.

CLASS A—CATTLE.

LOT 1—SHORTHORNS—THOROUGHBRED.

Steers four years old or over—2 entries:

First premium $25 00, to Van Meter & Hamilton, Winchester, Ky. No 2—Young Mary (white) steer 2d; age, 1,880 days; weight, 2,085 pounds; average gain per day, 1 10 pounds

Second premium $15 00, to Van Meter & Hamilton, Winchester, Ky. No. 1—Young Mary (roan) steer 1st; age, 1,902 days; weight, 2,440 pounds; average gain per day, 1 28 pounds

REPORT OF COMMITTEE.

The above awards, without consultation, were unanimous on first ballot, as stated; and the white steer receiving the first premium while not showing as large an average gain per day, in pounds, was smoother, and considered as having his fat more evenly distributed in the most valuable portions of the carcass, and with smaller bone than his competitor, the roan steer, which was patched with bunches of fat, and not as compact and square

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Steers three and under four years—2 entries:

First premium $25 00, to Van Meter & Hamilton, Winchester, Ky. No 3—Young Mary steer 5th; age, 1,280 days; weight, 2,115 pounds; average gain per day, 1.65 pounds.

Second premium $15 00, to Van Meter & Hamilton, Winchester, Ky No. 4—Young Mary steer 6th; age, 1,220 days; weight, 2,060 pounds; average gain per day, 1.68 pounds.

REPORT OF COMMITTEE.

The steers entered in this ring were evenly matched, as beef animals, both as to weight and quality of flesh, but the steer receiving the preference had the better back and loin, had more solid flesh, and was rather smoother, with the heavier hind quarter.

Steers two and under three years—5 entries:

First premium $25 00, H C. Nelson, Canton No. 8—Cash; age, 969 days; weight, 1,-705 pounds; average gain per day, 1 76 pounds.

Second premium $15 00, H C Nelson, Canton. No. 7—Raleigh; age, 978 days, weight, 1,600 pounds; average gain per day, 1.63 pounds.

REPORT OF COMMITTEE.

This was a magnificent ring of well and evenly developed steers; remarkably large and mature, for the age. All the steers were smooth, with even top and bottom lines, and good, blocky butcher's stock.

The first premium steer was most evenly covered with the choicest meat, was better quartered than the others, and had much the best back and loin.

The second premium steer had many of the superior qualities of the first prize animal, but was not as good a handler, the flesh not being as solid or well distributed.

The facts concerning the other steers in this ring show grand results, and reflect much credit on the breeders and feeders,

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Steers one and under two years—3 entries:

First premium $25 00, J. N. Brown's Sons, Berlin. No. 17—Duke of Sangamon (white steer); age, 650 days; weight, 1,480 pounds; average gain per day, 2.28 pounds.

Second premium $15 00, J. N. Brown's Sons, Berlin. No. 18, General Shields; age, 670 days; weight, 1,275 pounds; average gain per day, 1.90 pounds.

REPORT OF COMMITTEE.

The first premium steer, a pure white one, was the youngest and heaviest in the ring; with well sprung ribs, even top and bottom lines, wide back and excellent loin, broad and square hind quarters, flesh solid and mellow, smooth and finely proportioned throughout The quality of the flesh is very superior, and much riper than the average three and four-year old steers in our markets, and proves conclusively that a better system of feeding, for the more rapid growth and earlier maturity of young stock, is imperative, if the greatest profit is obtained, and this course should be encouraged

The animal awarded the second prize was a finely developed animal; showing remarkable growth, for his age, but lacking somewhat in the fine proportion, and was not as good a handler, nor as smooth a steer as the first choice

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Cows four years old or over—6 entries

First premium $25—J Baugh & Son, Farmers' Institute, Indiana. No 13, Superior 8th; age, 1,721 days; weight 2,075 pounds; average gain per day, 1 20 pounds.

Second premium $15—J N. Brown's Sons, Berlin. No 10, Illustrious 8th; age, 1,188 days; weight, 1,285 pounds; average gain per day, 1 08 pounds.

REPORT OF COMMITTEE.

A very uneven ring both in size, form and general appearance, with great disparity as to ages, which ranged from 1,188 days to 4,239 days.

Several of the cows having been breeders for years, were uneven and patched with a poor quality of flesh

The animals generally had the fine points in the head and outline of carcass of the thoroughbred shorthorns

The first premium cow, Superior 8th, was a massive, square, heavy set red cow, evenly fatted and finely proportioned throughout, with fine bone, neat, small head, good back and thick loin; flesh firm and mellow and well matured

The second premium cow, Illustrious 8th, barren, was not so fat as the first prize cow; very fine in bone, with short neck, neat, small head, broad back, good in loin, square built but rather undersized for age; good handler, and well covered with desirable flesh.

LOT 2.—HEREFORDS—THOROUGHBREDS.

Steer four years old or over—1 entry.

First premium $25 00, T. L Miller, Beecher No. 16, Hereford steer, age 2,692 days; weight 2,010 pounds. Average gain per day, .75 pounds.

REPORT OF COMMITTEE.

The only steer entered in this ring was not a creditable representative of the breed, and in a medium ring of even well fatted Hereford steers, would not have received a premium, but being in good flesh and presenting other desirable qualities, with a good distribution of meat in the better cuts, was deemed worthy of a premium. The drooping rump, with light hind quarters, when compared with the heavy four quarter, was noticeable as well as the large bone and coarseness in head and horns. The heavy, hard, thick hide, the general appearance and handling of the steer impressed the committee that the animal was but little better than a fair beef animal.

Steers three and under four years—3 entries.

First premium $25 00, T L Miller, Beecher. Hereford steer, No. 20, age 1,336 days; weight 1,705 pounds Average gain per day, 1 20 pounds

Second premium $15 00, Wm Powell Beecher Blake, No 21, age 1,356 days; weight 1 760 pounds Average gain per day, 1 20 pounds

REPORT OF COMMITTEE.

A very good, even ring of well fatted blocky steers, and creditable representatives of the best grade of butchers' stock

The first premium steer was well developed for age, very smooth throughout, with shoulder point and hip bone well covered, a neat head, very short neck, small in bone, well proportioned throughout, with good broad back and excellent loin, even top and bottom lines, well quartered flesh, solid mellow, well matured and evenly distributed and considered, first class carcass—a beef that would cut to the best profit for the butcher

The second premium steer was a superior beef animal, not quite so neat as the first prize steer, rather deficient in loin, head and neck coarser, heavier in bone, not quite so blocky, was well proportioned in quarters and equally as fat as the first prize steer, but the flesh was not as solid and mellow

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Steer two and under three years- 1 entry.

First premium $25 00 T L Miller, Beecher Hereford steer, No 23, age 1,060 days; weight 1 470 pounds Average gain per day, 1 36 pounds

REPORT OF COMMITTEE.

This steer shows a remarkable growth and early maturity and presents the good qualities of a profitable steer for the butcher Critically considered the hind quarter might be considered a shade light when compared with the heavy front quarter

The fine head, short neck good straight back and deep loin, with small bone, and flesh of excellent quality as indicated by the handling, give assurance that the animal will dress a very large proportion of good meat to the gross weight

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Cows three years old or over—3 entries

First premium $25 T L Miller, Beecher Jennie, No. 24 age 1,077 days, weight, 1,595 pounds, average gain per day, 95 pound

Second premium $15, Wm Powell, Beecher Marrilla, No 26, age 2,092 days, weight 1,715 pounds, average gain per day 82 pound

REPORT OF COMMITTEE

The cows entered in this ring were fine specimens of the Hereford breed, and well fatted but the flesh was not as evenly distributed as desirable, in some of the animals The first premium cow was well proportioned, and a very handsome and profitable beef animal for the butcher and consumer, with flesh evenly distributed well quartered, good straight top and bottom lines back very broad, with thick good loin, an animal that would cut to the very best advantage, with an unusually large proportion of valuable meat to the gross weight The cow was well quartered, very fine in bone with neat head short neck, and well covered with good flesh as well as fat, ribs well sprung, and body very compact and square; meat solid and mellow, and of the best quality

The second premium cow was as fat as the first prize animal, flesh not as well distributed, was rather heavier in bone with coarser head, and would not cut to as good advantage This cow had broad back and excellent loin, and with the exceptions noted, most evenly matched the first prize animal

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LOT 3—DEVONS—THOROUGHBRED

Steers four years old or over—2 entries·

First premium $25 00, Sanford Saun, Kingston Station May Boy—No 27; age, 1,658 days, weight, 1,645 pounds; average gain per day, .98 pounds

Second premium $15 00, Sanford Saun, Kingston Station May Duke—No 28. age, 1,652 days; weight, 1,870 pounds; average gain per day, 1 13 pounds

REPORT OF COMMITTEE.

The two steers exhibited in this ring were very well developed, and excelled in the evenness of flesh, which was well distributed; straight, well packed backs and thick loin; good quarters, smooth shoulders, excellent fore rib, well filled out.

The steers were good handlers, smooth and uniform throughout, small bone, short neck; and cannot be too highly commended as first class butcher's stock.

The second premium animal did not have his fat as well distributed, and was not as well quartered as the steer awarded the first premium.

Devon steers three and under four years -2 entries:

First premium $25 00, Thomas Bidwell, Gurnee. Postman--No 29; age 1,371 days; weight, 1,655 pounds; average gain per day, 1.20 pounds.

Second premium $15 00, Thomas Bidwell, Gurnee Comet—No. 30; age, 1,267 days, weight, 1,475 pounds; average gain per day, 1 16 pounds.

REPORT OF COMMITTEE.

The two steers entered in this ring were evenly matched. The first prize animal, considering age, shows the best growth. Both were well proportioned: with good quarters, broad backs and thick loin; with straight top line. The flesh was well matured and evenly distributed; rather heavy in bone, short neck, bottom line not straight

The second premium steer not so fat; was lighter in weight, but finer in bone.

Cow three years old or over—one entry:

The Devon Cow, No 31; was exhibited by W T Smith, Elkhorn, Wisconsin; age, 1,905 days; weight, 1,200 pounds; average gain per day, 67 pound.

REPORT OF COMMITTEE.

The cow was thin in flesh, and not considered worthy or eligible to entry in a ring where animals are expected to be ready for the butchers' block, and was not therefore awarded a premium

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LOT 5—GRADES OR CROSSES

Steers four years old or over -twelve entries.

First premium $25, D M. Moninger, Albion, Iowa Horace Greeley white steer; No. 41; age, 2,058 days, weight 2,750 pounds; average gain per day, 1 69 pounds.

Second premium $15, George Gray, Sr, Rushville, Ind. Gov Morton; No. 34, age, 2,033 days; weight, 2,830 pounds; average gain per day, 1.79 pounds.

REPORT OF COMMITTEE.

This ring of twelve head of steers was remarkable for heavy weights, the steers ranging from 1,980 to 3,155 pounds, and averaging 2,491 pounds after shrinkage of travel from place of shipment to the exhibition.

The cattle, without exception, were splendid representatives of fat, well matured bullocks, ripe for the block, and did great credit to the leading feeders and breeders of the several states which contributed as follows to this ring: Kentucky, four head; Indiana, two head; Iowa, two head; and Illinois, four head

The bullocks were well filled out, smooth and even for animals carrying such great weights, and were unusually free from bunches of unsaleable meat

After a lengthy and most critical examination by measurement and handling, the premiums were awarded as noted above

The even good quality and uniform distribution of flesh throughout was noticeable; some of the animals, however, had been fatted too long to cut to the greatest profit.

The first prize animal was a very large, handsome white high grade short horn steer, with even top and bottom lines; broad, straight back and deep loin and well quartered, smooth throughout, flesh well distributed, fine bone in proportion to size; short, neat neck, small head, flesh firm yet mellow, a large sack, a fine handler.

The second premium steer was well proportioned throughout, with flesh evenly distributed; meat thick, mellow and of the best quality; good back and loin, not as good top and bottom lines, or as well proportioned, or as well quartered, as the animal receiving the first prize.

Steers three and under four years—ten entries:
First premium $25. J D Gillett, Elkhart. No. 47. age, 1,307 days; weight, 2,185 pounds; average gain per day, 1.66 pounds.

Second premium $15, VanMeter & Hamilton, Winchester, Ky. No. 49; age, 1,298 days; weight, 2,305 pounds; average gain per day, 1.80 pounds.

REPORT OF COMMITTEE:

This ring consisted of ten head, and were of such uniform excellence as a group as to require the closest judgment of the best points of a beef animal

They all approached that high standard of perfection where experts often disagree As a lot, they were close and compact, ripe and symmetrical in form, with handling qualities ensuring the greatest profit to the butcher

The committee, after the most thorough examination, unanimously decided to give the first prize to a high grade short horn steer, red, with white face, some white spots on belly, flank and rump

This steer approached very near the desired model of perfection for a choice butcher's bullock, that of an oblong square.

The back of this steer was straight and broad from shoulder to loin, with flesh deep and even as a cushion; the ribs were well back, long and well covered, wide and deep chest; shoulders were well rounded, with a neat and short neck; head small, with fine expression The hind quarters were loaded with flesh and free from bunches of inferior meat. This animal, combining so many good points in body, had short, fine and well tapered limbs, thereby giving the greater profit to the breeder and consumer, and the least amount of offal to the butcher

The second prize was awarded to a red high grade short horn steer This steer, though younger and heavier than the first premium animal, was not as square and compact as the first prize animal, but most worthy of a second prize in a magnificent ring of steers, that could be but little improved in all that is requisite to a strictly prime bullock.

Steers two and under three years—11 entries:
First premium $25 00, J. D Gillett, Elkhart. No. 64; age, 962 days; weight, 1,885 pounds; average gain per day, 1 96 pounds.

Second premium $15 00, J. D Gillett, Elkhart. No. 61; age, 912 days; weight, 1,560 pounds; average gain per day, 1.62 pounds

REPORT OF COMMITTEE

The animals in this ring showed remarkable growth and evenness, with great uniformity, and a large proportion of improved shorthorn and Hereford blood

The animals in this ring were a smooth lot of well developed steers; with solid and mellow flesh, evenly distributed and first class as to quality; with broad straight backs, deep round and full loins, and well filled out with good quarters They were small in bone, with neat heads and short necks

The steer receiving the first premium was the most mature and best fatted steer in the ring, with great compactness in form.

The second premium steer was heavier in bone, and did not have quite as even top and bottom lines. Otherwise, the premium steers were very evenly mated

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Steers one and under two years -2 entries-
First premium $25 00, J D Gillett, Elkhart. No. 66; age, 596 days; weight, 1,420 pounds; average gain per day, 2 38 pounds.

Second premium $15 00 J D Gillett, Elkhart. No 65; age, 641 days: weight, 1,520 pounds; average gain per day, 2 37 pounds.

REPORT OF COMMITTEE.

The first premium was awarded to the youngest steer in the ring, he having the straightest top and bottom lines, with the best back and loin

The steers were smooth, thrifty animals; showing good growth, for the age; with fine heads, short necks, compact bodies, and an even distribution of flesh.

LOT 6—SWEEPSTAKES RINGS.

Steers four years old and over—14 entries:
Premium $50 00, Van Meter & Hamilton, Winchester, Ky. No. 1; age, 1,902 days; weight, 2,440 pounds; average gain per day, 1 28 pounds.

REPORT OF COMMITTEE.

The cattle in this ring were uneven, both as to size and age, and with scarcely an exception, were well fatted; the flesh quite evenly distributed. Some of the animals, however, were patched with fat, and were uneven.

The great majority of the steers had good backs and thick loins; were fine in bone and head, with short necks. As a rule, they were low, blocky, heavy-set cattle; with solid, mellow flesh Some had too great a proportion of fat to cut to advantage and profit. This was particularly noticeable in the older steers, in which the proportion of fat and cheap, inferior flesh, to the valuable portion of the carcass, was too great to give the butcher the greatest profit, or the consumer the best quality of well marbled flesh

The contest after much deliberation and the closest inspection, and application of all the tests applied by experts, was narrowed down to a Hereford grade steer and the prize animal above named, which excelled somewhat in fineness of bone and head, and of the two, would, in the opinion of your committee, dress the largest proportion of valuable meat to the live weight.

Steers three and under four years--9 entries:
Premium $50 00, J D Gillett, Elkhart. No 47; age, 1,307 days; weight, 2,185 pounds: average gain per day, 1 65 pounds

REPORT OF COMMITTEE.

This was the most even lot of cattle in the show, and all the animals competing were of extra quality; showing the greatest proportion of superior flesh to the live weight The handling indicated that the meat was well marbled, solid, mellow, ripe, and of the very best quality

The cattle were all large and extra well developed for age, with neat heads, small in bone, and all were well covered throughout, with broad, straight backs and thick full loin

There was not an animal in the ring that would not be considered a choice well fed, evenly fatted and prime steer of extra quality for the age.

The sweepstakes premium in this ring was awarded to a model beef steer, a high grade short horn, that could be improved only with age and the most skillful handling.

Steers two and under three years--thirteen entries:
Premium $50, J D. Gillett, Elkhart No 60, age 962 days; Weight 1,625 pounds; average gain per day, 1 69 pounds.

REPORT OF COMMITTEE.

The two year old steers made a very handsome and excellent ring of choice beef animals for the age; rather uneven as to form, size and weight and general appearance, as might be expected in a ring composed of the different breeds of cattle and their crosses

All the animals were creditable and profitable beef animals, and remarkably large and growthy for age and well covered with thick, mellow and first class flesh.

The animal receiving the award was, in the opinion of your committee, the neatest steer in the ring, plump, round and well filled in the best part, small in bone with the best back and loin, and most likely to dress the largest proportion of choice cuts to gross weight.

Steers one and under two years--five entries:
Premium $50, J N Brown Sons', Berlin. No. 17; age, 650 days; weight, 1,480 pounds; average gain per day, 2.28 pounds.

REPORT OF COMMITTEE.

The cattle entered in this ring showed very good growth, with flesh of fine quality, well distributed

All the steers were most creditable specimens of young beef animals, and were very mature for the age, with solid mellow flesh, good back and loins, very even top and bottom lines, well sprung ribs, short necks and fine neat heads small in bone and showing a very large proportion of short horn blood.

The white steer receiving the sweepstakes prize as the best animal in the show, one and under two years, of any breed; had more growth, with better quarters than his competitors and was a pure breed short horn.

Cows three years old or over--nine entries:
Premium $100 T. L. Miller, Beecher. No. 24; age, 1,677 days: weight, 1,595 pounds; average gain per day, .95 pounds.

REPORT OF COMMITTEE.

The animals in this ring showed great disparity as to size, age and quality, and none of the cows were evenly matched.

In this ring there were old breeding cows, patched with unsaleable flesh, and barren young cows evenly fatted with flesh well distributed.

For compactness, solidity, mellowness of flesh, none of the cows approached the pure bred Hereford cow, awarded the sweepstakes premium as the best cow of any age or breed in the show

This cow excelled in point of smallness of bone, short neat neck and full loin, straight, broad back, and from the general make up as most likely to give the greatest amount of the most valuable meat in proportion to the gross weight of the carcass.

As a profitable butchers' animal, and giving every assurance of furnishing meat most likely to satisfy critical judges of first quality of beef, this sweepstakes premium Here ford cow was all that could be desired

LOT 7--GRAND SWEEPSTAKES.

OPEN TO ALL.

Best steer or cow in the show--twenty-one entries:
Premium $200, John D. Gillett, Elkhart No. 47; age, 1,307 days; weight, 2,185 pounds; average gain per day, 1 65 pounds.

REPORT OF COMMITTEE.

There were twenty-one animals entered for this, the most valuable and highly commendatory prize offered at the exhibition for the best steer or cow in the show After a most tedious and critical examination, and the application of all the tests used by the most skillful experts, measurement, careful handling, and the experienced eye of practical butchers, engaged for many years in cutting up the best animals fed for the market, your committee unanimously awarded the premium to a high grade short horn steer, three and under four years old, named John Sherman—heretofore minutely described as the first premium steer, three and under four years, in the ring for grades and crosses, also in sweepstakes' ring for steers of all breeds and crosses of same age.

LOT 8—CAR LOADS

First premium $300, J D. Gillett, Elkhart Ten steers three years and over Averages—age, 1,394 days; weight, 2,047 pounds; gain per day, 1.48 pounds Total weight, ten head, 20,470 pounds

Second premium $150, J. D. Gillett, Elkhart. Ten steers, two and three years Averages--age, 1,025 days; weight, 1,667 pounds; gain per day, 1 63 pounds. Total weight; ten head, 16,670 pounds

Silver medal, VanMeter & Hamilton, Winchester, Kentucky. Ten steers, three years old or over Averages—age 1 539 days; weight, 2,245 pounds; gain per day, 1.48 pounds. Total weight, ten head, 22,450 pounds

Silver medal, Wm J Pauly, Plattsburg, Missouri Ten steers, two and under three years Averages—age, 1,102 days, weight, 1,759 pounds; gain per day, 1 60 pounds Total weight, ten head, 17,590 pounds

REPORT OF COMMITTEE

The cattle entered for the car load premiums were well developed and first-class beef animals, compact, well quartered and evenly fatted

They were either thoroughbred short horns or high grade short horns, with well matured flesh, considering the age, and were in prime condition for the block.

All the steers handled well, and were good feeders, with well packed backs and thick in loin, with straight top and bottom lines, and as a collection cannot be too highly commended as choice butchers' bullocks. They were well filled out from shoulder point to last rib, with short, neat necks and small heads, and were of attractive and spirited style

The animals composing the first premium car load were very uniform, compact and blocky animals, short and fine in leg, evenly fatted, with flesh well distributed, small in bone, heavy, well-proportioned, square quarters, and decidedly the most profitable lot for the butcher and consumer.

The steers in the lot awarded the second premium were rather finer in style and equally well fatted as the animals of the first premium car load, considering the age, but not as well matured, or as profitable, for the butcher and consumer.

The oldest and heaviest steers, entered for the car load premium, were exhibited by Messrs VanMeter and Hamilton, of Winchester, Kentucky, and were the fattest group of cattle in the ring, but lacked style, and the flesh was not so evenly distributed, and when compared with the other lots, were leggy and coarser in bone and head, but were so much above the average of good beef cattle marketed, that your committee unanimously, and with great pleasure recommend a silver medal to this lot, as the fattest car load of cattle on exibition, but from a butchers' stand-point, they would not cut to the greatest profit or furnish so much desirable meat, to the gross weight, for the consumer, as the lots awarded the first and second prizes.

The car loads of steers two and under three years of age exhibited by H. J. Pauly, of Plattsburg, Mo , were fatter than the second premium lot, but the flesh was not so thick or as well distributed, and when compared with the promium lot were found to lack in style, were longer in leg and not so blocky, and a more uneven lot in size, and lacking the uniform good qualities

The breeder and feeder of this lot of fine cattle deserves high commendation for superior skill in feeding and handling this stock, which are much superior to the average of good cattle, and your committee cheerfully recommend that the board give the exhibitor a silver medal for the fattest car-load of steers two and under three years of age on exhibition.

CONCLUSION

The earliest matured steer is the most profitable for the feeder, butcher and consumer, and the development and most rapid growth of young cattle should be encouraged.

Your committee cannot too strongly urge feeders and breeders to grow blocky steers, reasonably small in bone and short in leg, neat in head and neck

The best bullock for the butcher and consumer have square, broad backs, carrying the width and thickness of loin from hip bone to shoulder blade, well rounded and filled with firm yet mellow flesh from behind shoulder to the last rib, filled well down in flank, making the hind quarter equally well developed as the front quarters and carrying flesh down to hock

RECAPITULATION

OF

PREMIUMS AWARDED.

CLASS A—CATTLE.

LOT 1—SHORTHORNS—THOROUGHBRED

Steers four years old or over—2 entries:
First premium, VanMeter & Hamilton, Winchester, Ky $25 00
Second premium, VanMeter & Hamilton, Winchester, Ky 15 00

Steers three years old and under four years—2 entries:
First premium, VanMeter & Hamilton, Winchester, Ky 25 00
Second premium, VanMeter & Hamilton, Winchester, Ky 15 00

Steers two years old and under three years—5 entries:
First premium, H C. Nelson, Canton 25 00
Second premium, H. C Nelson, Canton 15 00

Steers one and under two years old—3 entries:
First premium, J. N. Brown's Sons, Berlin 25 00
Second premium, J. N. Brown's Sons, Berlin 15 00

Cows three years old or over—6 entries:
First premium, J. Baugh & Son, Farmers' Institute, Indiana 50 00
Second premium, J N Brown's Sons, Berlin 25 00

LOT 2—HEREFORD THOROUGHBREDS.

Steers four years old or over—1 entry:
Premium, T L Miller, Beecher. $25 00

Steers three and under four years—3 entries:
First premium, T L Miller, Beecher 25 00
Second premium, Wm. Powell, Beecher 15 00

Steers two and under three years—1 entry:
Premium, T L Miller, Beecher 25 00

Cows three years old or over—3 entries:
First premium, T. L Miller, Beecher 50 00
Second premium, Wm. Powell, Beecher 25 00

LOT 3—DEVONS—THOROUGHBREDS.

Steers four years old or over—2 entries:
First premium, Sanford Saun, Kingston Station $25 00
Second premium, Sanford Saun, Kingston Station 15 00

Steers three and under four years—2 entries:
First premium, Thomas Bidwell, Gurnee 25 00
Second premium, Thomas Bidwell, Gurnee 15 00

LOT 4—OTHER PURE BREEDS.

NO ENTRY.

LOT 5—GRADES OR CROSSES.

Steers four years old or over—13 entries:
First premium D M. Moninger, Albion, Iowa $25 00
Second premium, George Gray, Sr., Rushville, Ind 15 00

Steers three and under four years—10 entries:
First premium, J. D. Gillett, Elkhart $25 00
Second premium, VanMeter & Hamilton, Winchester, Ky..... 15 00

Steers two and under three years—8 entries:
First premium, J D Gillett, Elkhart..... 25 00
Second premium, J D. Gillett, Elkhart 15 00

Steers one and under two years—2 entries:
First premium, J D Gillett, Elkhart 25 00
Second premium, J. D Gillett, Elkhart..... 15 00

LOT 6--SWEEPSTAKES RINGS

OPEN TO ALL.

Steers four years old or over—13 entries:
Premium, VanMeter & Hamilton, Winchester, Ky $50 00

Steers three and under four years—8 entries:
Premium, John D Gillett, Elkhart 50 00

Steers two and under three years—13 entries:
Premium, John D Gillett, Elkhart..... 50 00

Steers one and under two years—5 entries:
Premium, J. N. Brown's Sons, Berlin 50 00

Cows three years old or over—6 entries:
Premium, T L. Miller, Beecher..... 100 00

LOT 7—GRAND SWEEPSTAKES

OPEN TO ALL.

Best Steer or Cow in the show—21 entries·
Premium. J D Gillett, Elkhart $200 00

LOT 8—CAR LOADS

Best car load Cattle, not less than ten head—4 entries:
First premium, J D. Gillett, Elkhart $300 00
Second premium, J D Gillett, Elkhart 150 00
W J. Pauly, Plattsburg, Mo ..... Silver medal
VanMeter & Hamilton, Winchester, Ky..... Silver medal.

CLASS C—SHEEP.

LOT 9—LONG WOOLS.

Pen three Wethers, over one and under two years—1 entry:
Premium, J. S Brown & Son, Decatur $15 00

Pen three Ewes, over three years—3 entries:
First premium, Frank Wilson, Jackson, Mich 15 00
Second premium, John Snell's Sons, Edmonton, Canada 10 00

Pen three Ewes, two years old and under three years—1 entry:
Premium, John Snell's Sons. Edmonton, Canada 15 00

Pen three Lambs, under one year old—2 entries:
First premium, John Snell's Sons, Edmonton, Canada 15 00
Second premium, John Snell's Sons, Edmonton, Canada..... 10 00

LOT 10—MIDDLE WOOLS,

NO ENTRIES

LOT 11—FINE WOOLS.

NO ENTRIES.

LOT 12—GRADES OR CROSSES.

NO ENTRIES.

LOT 13—SWEEPSTAKES.

OPEN TO ALL.

Pen three Wethers one and under two years—2 entries:
Premium, J. S Brown & Son, Decatur $25 00

Pen three Ewes over three years—3 entries:
Premium, Frank Wilson, Jackson, Mich..... 25 00

Pen three Ewes two and under three years—1 entry:
Premium, John Snell's Sons, Edmonton, Canada 25 00

Pen three Lambs under one year—2 entries:
Premium, John Snell's Sons, Edmonton, Canada 25 00

LOT 14—GRAND SWEEPSTAKES.

OPEN TO ALL.

Pen three Wethers, any age—5 entries:
Premium, J. S. Brown & Son, Decatur $50 00

Pen three Ewes, any age—4 entries:
Premium, John Snell's Sons, Edmonton, Canada 50 00

CLASS D—SWINE.

LOT 15—LARGE BREEDS.

Hogs over two years old 4 entries:
First premium, S H. Todd, Wakeman, Ohio $20 00
Second premium, H. C Castle, Wilmington 10 00

Hogs one and under two years—5 entries:
First premium, H C Castle, Wilmington 20 00
Second premium, T L Miller, Beecher 10 00

Pigs six months old and under one year—3 entries:
First premium, B J Orton, Cambridge 20 00
Second premium, H C. Castle, Wilmington 10 00

Pigs under six months old—2 entries:
First premium, H. C Castle, Wilmington 20 00
Second premium, B J. Orton, Cambridge 10 00

LOT 16—SMALL BREEDS.

Hogs one and under two years—1 entry:
Premium, Frank Wilson, Jackson, Mich $20 00

LOT 17—GRADES OR CROSSES.

Hogs one and under two years—1 entry:
Premium, Scheidt & Davis, Dyer, Ind..... $20 00

Pigs six months and under one year—2 entries:
First premium, Scheidt & Davis, Dyer, Ind..... 20 00
Second premium, Scheidt & Davis, Dyer, Ind..... 10 00

LOT 18—SWEEPSTAKES

OPEN TO ALL.

Hogs over two years old—4 entries:
Premium, H C. Castle, Wilmington $40 00

Hogs one and under two years—7 entries.
Premium, T. L. Miller, Beecher. . . 40 00

Pig six months and under one year:
Premium, B. J. Orton, Cambridge 40 00

Pig under six months:
Premium, H C. Castle. Wilmington 40 00

LOT 19 GRAND SWEEPSTAKES

OPEN TO ALL

Best Hog or Pig, of any age—14 entries:
Premium, B J Orton, Cambridge . . $80 00

CLASS E—POULTRY.

LOT 20—FAT POULTRY

Best Cock:
Premium, Scheidt & Davis, Dyer, Ind $5 00

Best Capon:
Premium, Axford & Co , Chicago .. . 5 00

Best Drake:
Premium, Scheidt & Davis, Dyer, Ind 5 00

Best Duck:
Premium, Scheidt & Davis, Dyer, Ind 5 00

LOT 21—WILD GAME.

Best display of Dead Game:
Premium, Sloan & Brothers, Chicago $100 00

CHALLENGE CUPS OFFERED BY THE NATIONAL LIVE STOCK JOURNAL, CHICAGO

Best Beef Animal any age or breed:
Premium Plate, J. D. Gillett, Elkhart $125 00

Best Fat Sheep any age or breed:
Premium Plate, J S Brown & Son, Decatur..... . .. . 65 00

Best Fat Hog any age or breed:
Premium Plate, B. J. Orton, Cambridge 65 00

WINTER MEETING, 1879.

DEPARTMENT OF AGRICULTURE,
SPRINGFIELD, TUESDAY, 10, o'clock A. M.,
January 7, 1879.

State Board of Agriculture met in regular annual session.

President Gillham in the chair.

Present: President Gillham, Vice-Presidents, Ellsworth, Emery, Periam, Haskell, Moore, Dysart, Snoad, Cobb, Douglas, Beaty, Smith, Bishop, Pullen, Stookey, and Washburn.

Minutes of the meetings of the Board held during the week of the State Fair at Freeport, September 16–21, 1878, were read and approved.

Minutes of the meetings of the Board held during the week of the Fat Stock Show at Chicago, December 2–7, 1878, were read and approved.

The annual report of the Secretary was read, and,

On motion of Mr. Moore,

The report was received.

Motion Mr. Haskell carried—

That the President appoint committees on Field Crops, Horticultural Display, Native Wine-Cider and Vinegar, Display of Grains and Vegetables, Invitations, and Road Making.

The President appointed on the said committees the following:

On Display of Grains and Vegetables—Messrs. Periam, Washburn and Beaty.

On Horticultural Display—Messrs. Haskell, Ellsworth and Pullen.

On Field Crops—Messrs. Beaty, Scott and Vittum.

On Native Wine-Cider and Vinegar—Messrs. Dysart, Emery and Stookey.

On Road Making—Messrs. Dysart. Landrigan and Washburn.

On Invitation—Messrs. Haskell, Cobb, Pullen and Douglas.

On motion of Mr. Ellsworth,

The President was made chairman of the committee on Invitation.

Mr. Periam introduced the following preamble and resolution, which,

On motion of Mr. Cobb, was adopted.

WHEREAS, The 30th General Assembly made appropriation for fitting up the Agricultural Museum room with cases, and for the purchase of suitable books, papers, etc., for the Library of the agricultural department, and,

WHEREAS, The Illinois State Board of Agriculture has offered a premium to agricultural societies and individuals, for the largest display of farm products, fruits, etc., grown in this State, which display is now on exhibition in the rooms of the department; therefore, be it

Resolved, That the committee of the Illinois State Board of Agriculture, be instructed to extend through the daily press, an invitation to his excellency the Governor, to the honorable State officials, the members of the 31st General Assembly, the Press, the officials of the city of Springfield and citizens, to be present Wednesday evening, January 8, 1879, at 8 o'clock, to witness the exhibition—examine the Museum and Library, and to become better acquainted with the work of the department of agriculture.

The reports of committees being next in order, the following reports were read, when,

On motion of Mr. Snoad,

The reports of standing and other committees were received and adopted, as follows:

REPORT OF COMMITTEE OF ARRANGEMENTS.

State Board of Agriculture:

The undersigned, members of the committee of arrangements, would respectfully submit the proceedings of the several meetings held the past year, as a report of the committee.

Respectfully submitted,

D. B. GILLHAM, Chairman.
D. E. BEATY,
SAMUEL DYSART,
GEO. S. HASKELL,
EMORY COBB,
SAMUEL DOUGLAS,
J. W. JUDY,
D. W. VITTUM,
J. R. SCOTT.

MINUTES OF THE COMMITTEE OF ARRANGEMENTS.

FIRST MEETING.

GRAND PACIFIC HOTEL,
CHICAGO, February 13, 1878.

Committee met as per appointment of Chairman Gillham.

Members of committee present—Messrs. Beaty, Douglas, Haskell, Vittum, Dysart and Scott.

Ex-President Reynolds, Vice Presidents Ellsworth, Moore, Emery, Periam and Secretary Fisher, were also present.

In the absence of Chairman Gillham, ex-President Reynolds was made Chairman *pro tem.*

On motion of Mr. Beaty,

Secretary Fisher was made Secretary of the committee of arrangements.

Secretary Fisher read a letter from President Gillham, explaining his absence, which was occasioned by sickness.

On motion of Mr. Douglas,

All the members of the Board present not members of the committee, were invited to participate in the deliberations.

The following report from the special committee of the Board was read:

CHICAGO, January 29, 1878.

Hon. D. B. Gillham, Chairman of Committee of Arrangements:

The following resolutions were adopted by the State Board of Agriculture at its last meeting:

Resolved, That a committee of three be appointed to ascertain the feasibility of holding a show of fat stock in the city of Chicago, during the month of December, 1878, and report the facts with their recommendations in relation thereto, to the committee of arrangements at the earliest practicable date.

Resolved. That in case such recommendation should favor holding such show, the committee of arrangements are hereby authorized to prepare a premium list for the same, amounting in the aggregate to not more than two thousand dollars ($2,000), not including special premiums which may be offered by private individuals, and that they shall make all necessary arrangements for a large and successful display of fat stock on that occasion.

Your committee would respectfully report that in accordance with the resolutions they visited Chicago on the 29th of January, 1878; that they examined the situation as fully as they could, and find,

1st. That the necessary room can be had in the Exposition Building on payment of ten per cent on the gross receipts of the exhibition to the exposition company.

2d. That the place named is in all respects suitable, being of ample size and well located.

3d. In consultation with some of the leading citizens they found the opinion quite freely expressed that such an exhibition can be successfully held.

4th. In conversation with citizens throughout the State, whom they have happened to meet since the winter meeting, they have invariably found a sentiment very much in favor of the proposed show.

5th. From what they have heard and observed in Chicago they have reason to believe that suitable attractive special premiums will be offered by parties in the city who feel an interest in the exhibition.

6th. On the whole they respectfully report that in their opinion the proposed exhibition can be held so as to benefit the stock raising interest of the country, and with credit and financial benefit to the department of agriculture.

7th. They advise that the committee of arrangements proceed with the preparatory work and public announcement of a definite programme and prize list, as soon as possible.

J. W. Judy,
J. R. Scott,
W. M. Smith,
Committee.

Motion Mr. Haskell, carried—

That the committee of arrangements proceed to carry out the suggestions of the committee in preparing a prize list, and making the necessary rules and regulations for the Fat Stock Show.

Motion of Mr. Beaty, carried—

That premiums be offered to the following lots of cattle, sheep, swine, poultry and wild game, viz: Cattle—Shorthorns, Herefords, Devons, Holstein, Grades or Crosses, with sweepstakes rings for the several ages. Sheep—Long Wools, Middle Wools, Fine Wools, Grades or Crosses, and sweepstakes rings for the several ages. Swine—Large Pure Breeds, Small Pure Breeds, Grades or Crosses, and sweepstakes rings for the several ages, and further that a grand sweepstakes prize in the several classes of stock for best animal of the varieties of stock on exhibition, viz: Cattle, Sheep and Swine. Premium to be offered for best male and female of the several varieties of Poultry.

Motion of Mr. Douglas, carried—

That 60 per cent. of the amount of premiums to be offered be apportioned to cattle, 15 per cent. to sheep, 20 per cent to hogs, and 5 per cent. to poultry and wild game.

Motion of Mr. Scott, carried—

That space be provided for the exhibition of butchers tools or any other articles appropriate to such a show, and that diplomas be awarded to such exhibits at the discretion of the Board.

Motion of Mr. Beaty, carried—

That a committee of five be appointed by the Chair to prepare the necessary rules and regulations.

The Chair appointed as said committee, Messrs. Beaty, Dysart, Vittum, Scott and Ellsworth.

Motion of Mr. Scott, carried –

That the exhibition of fat stock commence Monday, December 2nd, and close Saturday, December 7th, at 10 o'clock p m., the show to be open to visitors each day and evening during the week.

On motion of Mr. Vittum—

Adjourned to meet at Exposition Building at 2 o'clock p. m.

AFTERNOON SESSION.

EXPOSITION BUILDING, CHICAGO, 2 o'clock P. M.

Committee met pursuant to adjournment, with the addition of Vice-President Judy.

The committee on rules and regulations asked for further time to make report, which,

On motion of Mr. Douglas, was granted.

Motion of Mr. Ellsworth, was carried—

That a committee of five be appointed by the chair, with President Gillham as chairman, to solicit special premiums, and subscription for prizes, complete arrangements with the exposition company for the use of the exposition building, to secure the best facilities and rates with the railroad companies, for the transportation of passengers and freight to the Fat Stock Show.

The chair appointed as said committee, Messrs. Gillham, Ellsworth, Scott, Vittum, Judy, Douglas, and Secretary Fisher.

On motion of Mr. Douglas,

The committee took a recess of one hour, to give the committee on rules and regulations time to complete report.

At 3:45 p. m., the committee was called to order, when,

The committee on rules and regulations submitted the following rules, which were read, adopted, and the committee discharged:

Committee of arrangements, Illinois State Board of Agriculture:

GENTLEMEN:—Your Committee on rules and regulations for the Chicago Fat Stock Show, would recommend the following:

D. E. BEATY,
S. DYSART,
D. W. VITTUM,
J. R. SCOTT,
L. ELLSWORTH,
Committee.

REPORT.

The exhibition will be opened to the public on Tuesday, December 3, at 9 o'clock A. M., and will continue day and evening until the following Saturday, 10 o'clock P M.

GENERAL RULES AND REGULATIONS

FOR THE FAT STOCK SHOW OF 1878.

1. The Exposition Building will be open for the reception of stock, on Thursday, the 28th day of November, 1878.

ENTRIES.

1 Must be made on or before November 20 by application to the Secretary, at Springfield, who will furnish blank applications on which to specify exhibitor's name and address, with description of the animal offered

2. In all thoroughbred classes, authentic pedigrees must be furnished. Statements showing, so far as known, the proportion of improved blood in each animal exhibited in lots for grades or crosses, must be furnished at time of entry

3 The following fees will be charged, and must accompany applications for entries: for each cattle stall, $2 00; for each hog or sheep pen, $1 00, and for each coop, 50 cents.

4. Each exhibitor must purchase an *Exhibitor's Ticket* when applying for entries—a firm being regarded as one exhibitor Only one member of the firm will be admitted to the Building on the ticket which entitles the firm to compete

5 Every animal must be entered for competition in the name of the owner, but such name shall not appear on the entry card.

6. On the entry of each animal a card will be furnished the exhibitor, specifying the class, the number of the lot and the number of the entry, which card must remain attached to the animal during the exhibition, except classes C D and E, where the card shall be attached to the pen or coop.

7 Diligence will be used by the officers of the Board to prevent injury to, or loss of property, but they will not be responsible for any damage or loss that may occur.

ANIMALS

1 No animal on exhibition can be removed until the close of the exhibition, except for adequate cause, and then only on the order of the General Superintendent

2 No animals entered for premium at this show of fat stock, will be eligible for competition at any future exhibition

3 Animals and poultry entered for competition must have been the property of the exhibiter on and after August 1, 1878, and exhibiters will be required to made affidavit of ownership in accordance with this rule.

AWARDING COMMITTEES

1 Awarding committees will be three for each lot, and three for sweepstakes rings of each class Competent committees will be selected and notified in due time

2. Awarding committees will commence examinations on Tuesday, December 3, at 10 o'clock A. M., and continue until awards are completed.

3. No persons shall act as judge in any lot in which he may be an exhibitor, or the agent of an exhibitor.

4 No committeeman, having passed judgment on an animal in its regular lot or ring, shall be eligible to serve on committee on sweepstakes ring, where the same animal is again shown

5. No animal deemed unworthy, shall be awarded a premium; but no premium shall be withheld merely because there is no competition.

6. In case of protest, notice must be given to the Superintendent of Department before or during the examination of the animal, or article protested, and a written statement, setting forth the reasons for protesting verified by affidavit, must be filed with the secretary on the day the notice is given.

7. In all cases where protests are entered for improper or malicious purposes, the board will exclude said party protesting from exhibiting for two years thereafter.

8 Any exhibitor who shall tear off a premium ribbon, or authorize another person to do so, in the presence of the awarding committee, or shall otherwise insult the awarding committee, shall forfeit the premium and be excluded from competition.

9. The judges will report only the animals or articles entitled to premiums in the regular list; except they may especially commend such others as may be deemed worthy of commendation.

10 If a majority of the judges shall not be able to agree in any case, they shall report the fact of disagreement to the Superintendent of Department, who shall at once report the same to the President, who, with any two other members of the Board, shall appoint an additional judge, who shall confine his examination to the animals receiving votes, when the agreement of any two judges shall determine the award.

11. The judges are instructed to award premiums to such animals as present the greatest weight in the smallest superficies—taking into consideration age, the quality of flesh, and its distribution in the most valuable portions of the carcass.

12. Should any doubt arise as to the regularity of entry, or any other important matter, which the committee feel incompetent to decide, they shall at once report the same to the Superintendent of the Department for decision

13 Awarding committees are instructed that if they shall have good reason to believe that any exhibiter, by false entry or otherwise, attempts to deceive the committee or the public, and obtain a premium by misrepresentation, they shall report the fact at once to the Superintendent of the Department, who shall immediately instruct the committee that such exhibiter is thenceforth excluded from competition

14. Each award (and protest, if any are made), must be written in a plain, careful manner by the Superintendent, in blank page opposite the entry.

15 The books must be returned by the Superintendent of each department to the Secretary as soon as the awards in each are completed.

16 Great care must be exercised to preserve the awarding committees' books, and the awards must be entered as above, in a plain, legible manner, in the proper place, as the premiums will be paid on the authority of these entries *only*

17 Superintendents will be particular to observe the following: *Blue Ribbons* are designed for first premiums; *Red Ribbons* for second premiums.

18. Decisions of Awarding Committees shall be final except in cases of fraud and protests

19. Any exhibiter attempting to interfere with the judges during their adjudications, will be promptly excluded from competition.

AUDITING COMMITTEE.

1 The Auditing Committee will have charge of the gates and tickets.
2. *All bills against the State Board must be made in detail*; and all bills contracted during the show, or in immediate preparation therefor, must be certified by the Superintendent, on whose order the service or material was furnished, and must be approved and signed by a majority of the auditing committee, before they can be paid by the Treasurer.

GENERAL SUPERINTENDENT.

The General Superintendent will have charge of the buildings and police. He will have an efficient police force on duty day and night, and will assign such number of policemen to the Superintendents of departments, as they may require

THE SUPERINTENDENT OF STALLS AND FORAGE.

The Superintendent of Forage and Stalls will designate the hours of delivery of feed, forage and bedding for animals on exhibition: which can be obtained on application to him at reasonable rates Stalls and pens must be cleaned before 3 o'clock A. M, and again between the hours of 5 and 7 o'clock P M, each day.

ADMISSION FEES.

Exhibitors tickets, good during the show, $1 50. Tickets admitting one person once, 25 cents. Tickets admitting children under twelve years old, 15 cents

On motion of Mr. Beaty,

The selection of a veterinary surgeon to be in attendance during the exhibition, was left with the sub-committee of arrangements.

On motion of Mr. Douglas,

The Secretary was instructed to furnish the Chicago papers with a copy of the rules and regulations.

On motion of Mr. Judy,

The committee adjourned to meet at the Grand Pacific, at 7 p. m.

EVENING SESSION.

GRAND PACIFIC, 7 o'clock p. m.

Present: Messrs. Beaty, Douglas, Haskell, Judy, Vittum, Scott, Moore, Emery, Dysart, and Ellsworth.

On motion of Mr. Dysart,

Mr. Beaty, was made chairman.

Motion Mr. Emery carried—

That the lot for Holsteins, be omitted from the premium list, and that, in lieu thereof, a lot be made for "other pure breeds."

Motion of Mr. Emery, carried—

That the sweepstakes premium be four times the amount of the class premium for aged animals in the several lots, and that the grand sweepstakes prizes be double in amount that of the sweepstakes.

Motion of Mr. Vittum, carried—

That a second premium be paid in all except sweepstakes rings.

Mr. Emery offered the following resolution, which was adopted:

Resolved, That in case a subscription of at least $6,000, can be obtained in addition to the $2,000, voted by the Board, that the premium list be so prepared and apportioned as pro rated to the several classes, viz: Cattle. 60 per cent, swine, 20 per cent, sheep, 15 per cent, poultry and wild game, 05 per cent.

Mr. Emery, Superintendent Class E., Poultry, recommended, C. J. Ward, Henry Howland, G. C. Smith, A. Snider, of Chicago, and W. A. Butler, Oak Park, as committee of experts to judge the poultry class at the next State Fair, in accordance with action of the Board at the last winter meeting.

On motion of Mr. Ellsworth,

The recommendation was approved.

The following communication from Vice President Smith was read, and,

On motion of Mr. Douglas, recommendation approved.

Chairman Committee of Arrangements, State Board of Agriculture:

I would respectfully recommend that the following instructions, so important to exhibitors in the mechanical department, be placed at the head of section 2, Class F. Mechanic Arts, in the premium lists, for 1878, viz:

Exhibiters requiring floor space in Power Hall, and the use of shafting, will make application for space, by letter to the Superintendent before August 15, 1878, such application must state the extreme dimension of the machine in the direction of the shaft of the hall, designated as length, the dimension at right angles, to be designated as width, and no part of the machine must extend beyond the space so described. A plan or sketch giving dimensions, with the position of drawing pulley marked, should accompany the application.

Space will be assigned by the Superintendent, on, or before September 10, giving ample time to place machinery in position.

Small light machines needing power, will be granted any available space in Power Hall, up to Tuesday, September 17, 1878.

All articles should be ready for exhibition on the first day of the Fair, and the exhibitors are urged to commence their arrangements in time.

Respectfully submitted, W. M. SMITH.

Motion of Mr. Vittum, carried—

That a committee of five with the President and Secretary, be appointed to complete the arrangements for the Fat Stock Show, and to report classification of premiums, and any other matters, at the next meeting of the committee of arrangements.

The Chair appointed as said committee, President Gillham, Vice Presidents Ellsworth, Scott, Vittum, Douglass, Judy and Secretary Fisher.

On motion of Mr. Judy, committee adjourned subject to call of the Chairman.

SECOND MEETING.

FREEPORT ILLINOIS, Wednesday, May 1, 1878.

Committee met as per appointment of Chairman Gillham.

Present: Messrs. Gillham, Haskell, Dysart, Cobb, Douglas and Scott.

Mr. Scott, General Superintendent, reported that the local committee had failed to provide the following necessary accomodations called for in the specification of requirements, also the moving of cattle stalls as agreed upon, to-wit:

1st. The removal of the cattle stalls north of the hog-pens, back to the north end of the grounds, and extending the west row of stalls to the north end of the grounds.

2d. The roofing and flooring of the unfinished sheep and hog pens, in accordance with specifications.

3d. The extension of the north wing of the exhibition hall 60 feet.

4th. Finishing the fences and etc., of the show ring according to the specifications.

On motion of Mr. Dysart,

The local committe were invited to be present.

Messrs. Taylor, Young, Cronkrite, Krome and Wright, of the local committe accepted the invitation.

On motion of Mr. Douglas,

The Secretary read and furnished the local committee a copy of the accommodations required.

The local committee retired.

Mr. Haskell offered the following resolution, which was adopted:

Resolved, That if the local committee refuse to make the additional improvements asked for by the committee of arrangements, for holding the fair of 1878, then the General Superintendent be instructed to move the north line of stalls, and do the necessary work, to complete the exhibition ring in front of the amphitheater, and to hire sufficient lumber to cover and to have covered the sheep and hog pens, already temporarily erected.

The Secretary recommended the publication of a 24 page pamphlet on the subject of drainage, and to contain an essay on farm drainage, by H. W. S. Cleveland, and other matter relating to this subject.

Motion Mr. Scott, carried—

That the Secretary be authorized to publish the circular on drainage, the cost to be paid out of the appropriation for crop reports.

On motion of Mr. Haskell,

The President and General Superintendent were authorized to make arrangements for music during the Fair.

Motion Mr. Scott, carried—

That the printing committee be authorized to expend one hundred and forty dollars in locally advertising the Fair.

Mr. Gillham chairman of the sub-committee to whom was referred the completion of the arrangements for the Fat Stock Show, submitted the following report, which was received and amended to read as follows:

Committee of Arrangements:

The multiplicity of details necessary to complete arrangements for the Fat Stock Show, made it desirable to apportion the work among the members of your sub-committee, and in order to bring all the work performed before the committee of arrangements in due form for your consideration, respectfully submit the record of the several meetings as a report of the sub-committee, and ask your approval and discharge from the further consideration of the subject.

D. B. Gillham,
Lewis Ellsworth,
Jas. R. Scott,
D. W. Vittum, Jr.
S. Douglas,
Jas. W. Judy.
Committee.

MINUTES OF MEETINGS OF SUB-COMMITTEE.

Grand Pacific Hotel,
Chicago, March 5th, 9 o'clock A M.

Meeting called to order by Chairman Gillham.

Present: Messrs. Gillham, Douglas, Ellsworth, Vittum and Secretary Fisher.

Ex-President Reynolds, Vice Presidents Periam and Emery, being present.

On motion of Mr. Douglas,

They were invited to take part in the proceedings of the committee.

Motion of Mr. Reynolds, carried—

That all sweepstakes premiums be paid in genuine silver plate.

Motion of Mr. Ellsworth, carried—

That a committee of three be appointed (the President being chairman) to procure the necessary plate.

President Gillham appointed Messrs Reynolds and Ellsworth, to act with him on said committee.

On motion of Mr. Douglas,

Committee adjourned to 9 a. m., to-morrow.

GRAND PACIFIC HOTEL,
CHICAGO, March 6, 1878, 9 o'clock A. M.

Committee met pursuant to adjournment.

Present: Messrs. Gillham, Douglas, Ellsworth, Vittum, Emery and Secretary Fisher.

Motion Mr. Ellsworth carried—

That a committee of three be appointed to visit the Stock Yards to solicit subscriptions for premiums.

Chair appointed as said committee Messrs. Ellsworth, Douglas and Vittum.

Motion carried—

That Messrs. Gillham, Emery and Secretary Fisher be appointed a committee to visit the railroads, with a view of making the best arrangements for the transportation of freight and passengers to the Fat Stock Exhibition.

Motion Mr. Emery carried—

To print for distribution (5000) five thousand copies of the catalogue containing the Rules and List of Prizes offered for the Fat Stock Exhibition.

On motion Mr. Ellsworth,

Adjourned to meet at exposition building at 4 o'clock p. m.

EXPOSITION BUILDING,
4 o'clock p. m.

Committee met pursuant to adjournment.

On motion of Mr. Ellsworth,

The President and Secretary were appointed a committee to confer with the Exposition company and complete arrangements for the use of their buildings for the show.

Motion carried.

That the matter of distributing the complimentary tickets to the Fat Stock Show, be left to the President.

Mr. Ellsworth, chairman, made the following report which was received and adopted:

Chairman Committee:

The undersigned would report that they visited the Union Stock Yards for the purpose of soliciting funds for prizes, and that the stock-commission men manifested much interest in the enterprize and proposed to call a meeting to consider how they might best aid in the work.

Mr. Sherman, the Superintendent of the Stock Yards, was absent, and it was thought advisable to make another visit, when his co-operation could be secured, in obtaining subscriptions.

L. ELLSWORTH,
S. DOUGLAS,
D. W. VITTUM,
Committee.

President Gillham, chairman committee on transportation, reported having visited the various railroads, and was encouraged to believe that reduced rates would be given.

(NOTE. The following railroads afterwards granted concessions as noted below.)

RAILROAD ARRANGEMENTS FOR THE CHICAGO FAT STOCK SHOW—1878.

*Baltimore & Ohio Michigan Central **Lake Shore & Michigan Southern Pennsylvania Company Pittsburg, Cincinnati & St Louis	Will carry stock to Chicago at local rates and refund one-half of the amount paid on presentation of Secretary's certificate that the stock has been on exhibition.
Chicago, Burlington & Quincy Chicago & Northwestern Chicago & Alton Chicago, Rock Island & Pacific Chicago & Eastern Illinois Illinois Central Chicago & Iowa Chicago & Paducah Chicago, Pekin & Southwestern	Will carry stock to Chicago at regular tariff rate and refund one-third of the amount paid on presentation of Secretary's certificate that the said stock has been on exhibition

Paid freight bills should be presented with the Secretary's certificate

These concessions are made upon condition that the roads are released from any and all liability exceeding $50 per head, in case of injury by accident or otherwise, while in transit, or while awaiting shipment or delivery at stations.

*Arrangements apply to Chicago Division

**Arrangements apply to stock shipped in car loads, or in lots of four animals or more; the revenue of the road in no case to be made less than $12 for 100 miles or less; $15 for distancs between 100 and 200 miles, and $20 for distances between 200 and 300 miles

On motion, adjourned to meet at the call of the Chairman.

GRAND PACIFIC HOTEL,
CHICAGO, March 19, 1878, 9 o'clock A. M.

Committee met pursuant to the call of the Chairman.

Present: Messrs. Gillham, Judy, Scott, Vittum, Dysart, Emery and Secretary Fisher.

Motion of Mr. Vittum, carried—

That a committee of three be appointed to solicit subscriptions from each of the following, viz: Stock Yards, Hotels, and Agricultural Press.

Committees were appointed as follows:

Stock Yards, Messrs. Judy, Scott, Vittum.

Hotels and Railroads, Messrs. Gillham, Reynolds, Fisher.

Press, Messrs. Emery and Dysart.

On motion of Mr. Vittum,

The committee adjourned to meet at the Exposition Building at 4 o'clock p. m.

EXPOSITION BUILDING,
4 o'clock P. M.

Committee met as per adjournment.

Present: Messrs. Gillham, Reynolds, Vittum, Ellsworth, Scott, Dysart and Secretary Fisher.

The President presented the following contract with the Exposition Company, which was read and approved.

[Contract]

This memorandum made this 20th day of March 1878, between the Inter-State Industrial Exposition of Chicago, party of the first part, and the Illinois State Board of Agriculture, party of the second part: witnesses.

1 That the party of the first part consents to the use of the north half of the Exposition Building, including that part of Agricultural Implement Hall lying west of the boiler house; and also the resturant, and grounds adjoining by the party of the second part, for holding a Fat Stock Show during the first half of December next.

2. The said party of the second part shall take posession of the said premises, in the condition in which they may then be, on the 15th day of November next, and deliver up to said party of the first part posession of said premises on the 24th day of December next, in like order and condition in which they may be so received - ordinary wear and tear, and loss or damage by fire, excepted All of which the said party of the second part hereby agrees to do.

3 All expenses, of whatever nature, growing out of said use and occupation of said premises of preparing and restoring the same as aforesaid, and of holding and conducting said Fat Stock Show, shall be paid by the said party of the second part; and the said party of the first part shall not be liable for any portion of the same

4 All tickets for paid admissions to said show shall be stamped or otherwise authenticated by the treasurer of the said party of the first part, and no money or other tickets for paid admissions shall be received at the door.

The said treasurer shall appoint the necessary cashier and ticket sellers and shall furnish the said party of the second part daily with a correct statement of the tickets sold, and money received therefor

5 The party of the second part shall appoint all doorkeepers and ticket takers, and in due time previous to the first of December, next, shall furnish the treasurer of the party of the first part with the necessary admission tickets to be stamped.

6 In consideration of the consent of the party of the first part to the said use and occupation of said premises by the party of the second part, it is hereby agreed that the said party of the first part shall by its treasurer receive all moneys for admissions, and permits, and shall retain ten per cent (10 per cent) of the gross amount so received, as, and for its own use and benefit and shall hold the residue, that is ninty per cent of the gross amount so received subject to the order of the party of the second part from day to day, rendering full and final statement of receipts and paying over any remaining balance there may be due to the party of the second part, Tuesday, on December 10, 1878

7. In case said party of the second part shall omit or neglect to restore said premises to their original condition as received in accordance with the provisions aforesaid, by the said 24th day of December next, it is hereby agreed that the said party of the first part may proceed to restore said premises to the condition substantially in which they may be received by the party of the second part, charging the actual cost of the same to the said party of the second part, and the said party of the second part hereby agree to promptly pay such costs on presentation of the bill for the same.

In witness whereof the parties hereto by their corporate seals and by the signitures of their Presidents and Secretaries respectfully have executed this memorandum of agreement in duplicate hereof the day and year first above written

ROBERT HARRIS,
[SEAL] President Inter-State Industrial Exposition of Chicago
JOHN P REYNOLDS, Secretary

D. B. GILLHAM.
[SEAL] President Illinois State Board of Agriculture
S D. FISHER, Secretary

The committee appointed to visit the hotels reported the following subscriptions to the premium fund:

Grand Pacific Hotel, Chicago, John B. Drake, & Co., proprietors,	$200 00
Palmer House, Chicago, Potter Palmer, proprietor	200 00
Commercial Hotel, Chicago H. G Pulling, proprietor	50 00
Atlantic Hotel, Chicago, W L Newman, proprietor	25 00

The committee appointed to visit the agricultural press reported subscriptions, to-wit:

Prairie Farmer Co., Chicago	$50 00
Western Rural, Chicago	50 00
Farmers' Review, Chicago	50 00
American Poultry Journal, Chicago	25 00

And the following from the National Live Stock Journal, on the conditions named:

The persons winning this challenge plate, next December, will be entitled to hold it for one year, when it must be returned, to be again subject to competition, and when won by the same person two years in succession, or any three years, it will become his absolute property:

CHALLENGE CUP.

For best Beef Animal, any age or breed, value	$100 00
For best Fat Sheep, any age or breed, value	50 00
For best Fat Hog, any age or breed, value	50 00

The committee to visit the Stock Yards reported subscription of $1,000, by John B. Sherman, for the Union Stock Yard Co.

On motion Mr. Dysart,

Adjourned, to meet at Grand Pacific, at 7 o'clock, p. m.

GRAND PACIFIC HOTEL, 7 o'clock, p. m.

Committee met, as per adjournment.

Present: Messrs. Gillham, Reynolds, Dysart, Vittum, Ellsworth, Scott, Judy and Secretary Fisher.

Mr. Scott moved to offer the following premiums for car load lots, to-wit:

Best car load Fat Cattle, not less than ten head	$100 00
Second best	50 00

Motion lost.

Motion of Mr. Dysart carried—

To reconsider the vote on giving premium to car load lots.

Mr. Scott's motion again coming up, was adopted as amended and to read as follows:

CAR LOADS.

Four-year-olds and over, to weigh not less than 2,000 pounds; 3-year-olds and under 4, to weigh not less than 1,700 pounds; 2-year-olds and under 3, to weigh not less than 1,500 pounds.

Best car-load cattle, not less than 10 head (Silver service, $200; cash, $100).	$300 00
Second premium	150 00

Motion Mr. Reynolds, carried—

That Messrs. Gillham, Judy and Beaty be appointed a committee to distribute the sum appropriated by the Board, ($2,000), and the amount raised by special subscription, the committee to report the classification at the next meeting of the committee of arrangement.

Motion of Mr. Judy, carried—

That the vote authorizing the publication of 5,000 copies of the Premium List be reconsidered.

Motion of Mr. Ellsworth, carried—

That Messers Gillham, Reynolds and Secretary Fisher, be constituted a committee to supervise the publication of the prize list for the Fat Stock Show.

On motion adjourned.

D. B. GILLHAM,
Chairman Committee.

S. D. FISHER.
Secretary of Committee.

On motion of Mr. Dysart.

The report of the sub-committee was adopted, and the committee discharged.

The following report was received and adopted:

Committee of arrangements.

The undersigned were appointed by the sub-committee, to aportion the amount of special subscription, and the appropriation of $,000, made by the Board for the Fat Stock Show prizes, and having performed that duty, would recommend the following classification and ask to be discharged from further consideration of the same.

D. B. GILLHAM.
J. W. JUDY.
D. E. BEATY.
Committee.

LIST OF PRIZES.

CLASS A—CATTLE.

LOT 1—SHORT HORNS--THOROUGHBREDS

Best Steer, 4 years old or over	$25 00
Second best	15 00
Best Steer 3 years old and under 4	25 00
Second best	15 00
Best Steer 2 years old and under 3	25 00
Second best	15 00
Best Cow 3 years old or over	50 00
Second best	25 00

LOT 2--HEREFORDS -THOROUGHBREDS

Best Steer 4 years old or over	$25 00
Second best	15 00
Best Steer 3 years old and under 4	25 00
Second best	15 00
Best Steer 2 years old and under 3	25 00
Second best	15 00
Best Cow 3 years old or over	50 00
Second best	25 00

LOT 3--DEVONS—THOROUGHBREDS

Best Steer 4 years old or over	$25 00
Second best	15 00
Best Steer 3 years old and under 4	25 00
Second best	15 00
Best Steer 2 years old and under 3	25 00
Second best	15 00
Best Cow 3 years old or over	50 00
Second best	25 00

LOT 4—OTHER PURE BREEDS (NOT NAMED)

Best Steer 4 years old or over	$25 00
Second best	15 00
Best Steer 3 years old and under 4	25 00
Second best	15 00
Best Steer 2 years old and under 3	25 00
Second best	15 00
Best Cow 3 years old or over	50 00
Second best	25 00

LOT 5—GRADES OR CROSSES

Best Steer 4 years old or over	$25 00
Second best	15 00
Best Steer 3 years old and under 4	25 00
Second best	15 00
Best Steer 2 years old and under 3	25 00
Second best	15 00
Best Cow 3 years old or over	50 00
Second best	25 00

LOT 6—SWEEPSTAKES RINGS.

OPEN TO ALL.

Best Steer 4 years old or over	$50 00
Best Steer 3 years old and under 4	50 00
Best Steer 2 years old and under 3	50 00
Best Cow 3 years old or over	100 00

LOT 7—GRAND SWEEPSTAKES.

OPEN TO ALL.

Best Steer or Cow in the Show	$200 00

LOT 8—CAR-LOADS.

Four-year-olds and over to weigh not less than 2,000 pounds; 3 year olds and under 4 to weigh not less than 1,700 pounds; 2 year olds and under 3 to weigh not less than 1,500 pounds

Best car-load Cattle, not less than 10 head (Silver service, $200); cash, $100	$300 00
Second premium	150 00

CLASS C.—SHEEP.

LOT 9—LONG WOOLS.

Best pen 3 Wethers over 3 years old	$15 00
Second best	10 00
Best pen 3 Wethers over 2 years and under 3	15 00
Second best	10 00
Best pen 3 Wethers over 1 year and under 2	15 00
Second best	10 00
Best pen 3 Ewes over 3 years old	15 00
Second best	10 00
Best pen 3 Lambs (male or female) under 1 year old	15 00
Second best	10 00

LOT 10—MIDDLE WOOLS.

Best pen 3 Wethers over 3 years old	$15 00
Second best	10 00
Best pen 3 Wethers over 2 years and under 3	15 00
Second best	10 00
Best pen 3 Wethers over 1 year and under 2	15 00
Second best	10 00
Best pen 3 Ewes over 3 years old	15 00
Second best	10 00
Best pen 3 Lambs (male or female) under 1 year old	15 00
Second best	10 00

LOT 11—FINE WOOLS.

Best pen 3 Wethers over 3 years old	$15 00
Second best	10 00
Best pen 3 Wethers over 2 years old and under 3	15 00
Second best	10 00
Best pen 3 Wethers over 1 year old and under 2	15 00
Second best	10 00
Best pen 3 Ewes over 3 years old	15 00
Second best	10 00
Best pen 3 Lambs (male or female) under 1 year old	15 00
Second best	10 00

LOT 12—GRADES OR CROSSES.

Best pen 3 Wethers over 3 years old	$15 00
Second best	10 00
Best pen 3 Wethers over 2 years old and under 3	15 00
Second best	10 00
Best pen 3 Wethers over 1 year old and under 2	15 00
Second best	10 00
Best pen 3 Ewes over 3 years old	15 00
Second best	10 00
Best pen 3 Lambs (male or female) under 1 year old	15 00
Serond best	10 00

LOT 13—SWEEPSTAKES.

OPEN TO ALL.

Best pen 3 Wethers over 3 years old.	$25 00
Best pen 3 Wethers over 2 and under 3	25 00
Best pen 3 Wethers over 1 and under 2.	25 00
Best pen 3 Ewes over 3 years old	25 00
Best pen 3 Lambs (male or female) under 1 year old.	25 00

LOT 14—GRAND SWEEPSTAKES.

OPEN TO ALL.

Best pen 3 Wethers, any age	$50 00
Best pen 3 Ewes, any age	50 00

CLASS D—SWINE.

LOT 15—LARGE BREEDS—POLAND CHINA, BERKSHIRE, CHESTER WHITE, ETC

(EITHER SEX)

Best Hog over 2 years old	$20 00
Second best	10 00
Best Hog 1 year old and under 2	20 00
Second best	10 00
Best Pig 6 months old and under 1 year	20 00
Second best	10 00
Best Pig under 6 months old	20 00
Second best	10 00

LOT 16—SMALL BREEDS—SUFFOLKS, ESSEX, SHORT-FACED, LANCASHIRE, ETC.

(EITHER SEX)

Best Hog over 2 years old	$20 00
Second best	10 00
Best Hog over 1 year old and under 2	20 00
Second best	10 00
Best Pig under 6 months old	20 00
Second best	10 00

LOT 17—GRADES OR CROSSES.

(EITHER SEX)

Best Hog over 2 years old	$20 00
Second best	10 00
Best Hog 1 year old and under 2	20 00
Second best	10 00
Best Pig 6 months old and under 1 year	20 00
Second best	10 00
Best Pig under 6 months old	20 00
Second best	10 00

LOT 18—SWEEPSTAKES.

(EITHER SEX—OPEN TO ALL.)

Best Hog over 2 years old	$40 00
Best Hog 1 year old and under 2	40 00
Best Pig 6 months old and under 1 year	40 00
Best Pig under 6 months old	40 00

LOT 19—GRAND SWEEPSTAKES

(OPEN TO ALL.)

Best Hog or Pig, any age	$80 00

CLASS E—POULTRY.

LOT 20—FAT POULTRY.

(ALIVE.)

Best Turkey Cock	$5 00
Best Turkey Hen	5 00
Best Gander	5 00
Best Goose	5 00
Best Cock	5 00
Best Hen	5 00
Best Capon	5 00
Best Drake	5 00
Best Duck	5 00

FAT POULTRY.

Best display of Live Fat Poultry	$25 00

LOT 21—WILD GAME.

(BIRDS AND ANIMALS.)

Best display of Dead Game, varieties to be labeled with correct names	$100 00

On motion of Mr. Cobb,

The classification of premiums as reported was adopted and the committee discharged.

Mr. Scott offered the following resolution, which was adopted:

Resolved, That the Board accept the following premium offered by the National Live Stock Journal Company, of Chicago, of silver plate to the value of $200 00, as designated by said company on the conditions hereafter named, and that the same be published in the list of prizes:

CONDITIONS AND PRIZES.

The persons winning this challenge plate next December will be entitled to hold it for one year, when it must be returned to be again subject to competition, and when won by the same person two years in succession, or any three years, it will become his absolute property.

CHALLENGE CUP.

For best Beef Animal, any age or breed, value	$100 00
For best Fat Sheep, any age or breed, value	50 00
For best Fat Hog, any age or breed, value	50 00

On motion of Mr. Dysart,

The rules and regulations and the classification of prizes, as amended and read, were approved and ordered printed.

On motion of Mr. Scott,

The matter of publishing an edition of two thousand copies of the Catalogue of Fat Stock Prizes, separate from the State Fair Premium List, was left with the printing committee with power to act.

On motion Mr. Haskell,

Adjourned subject to call of Chairman.

S. D. FISHER, Secretary. D. B. GILLHAM, President.

THIRD MEETING OF COMMITTEE OF ARRANGEMENTS.

FREEPORT, ILLINOIS, August 7, 1878.

Committee met as per appointment of Chairman Gillham.

Present: Messrs. Gillham, Beaty, Haskell, Vittum, Moore and Ellsworth.

The minutes of meeting of May 1st, of the committee of arrangements relating to the State Fair and the drainage circular, were read and approved.

Messrs. Rosenstiel and Young, of the local committee, were present and stated that the local committee had decided to make the following additional improvements to the grounds, as required at the May meeting of the committee of arrangements:

1st. To cover the temporarily constructed sheep and hog pens.

2d. To furnish an exhibition tent covering an area of 1,800 or more superficial feet.

3d. To complete the exhibition ring according to the specifications of requirements.

Messrs. Rosenstiel and Young retired.

Mr. Ellsworth introduced the following resolution, which was adopted:

Resolved, That in the absense of the General Superintendent and in the event that the local committee refuse to remove the north line of stalls, as required by the committee at the May (1) meeting, that the superintendent of forage and stalls be authorized to proceed without delay to make the changes named

President Gillham stated that the 14th volume of the transactions of the Board was printed, and that the 15th volume was going through the press, and would soon be ready for the binder; that the state appropriation for binding had been expended; that the public binder would proceed with the binding, on his own account, provided that the State Board of Agriculture would pay the interest on the money required to do the work, until the amount could be realized from the state by appropriation.

Mr. Ellsworth introduced the following preamble and resolutions, which were adopted:

WHEREAS, The 14th volume of the Reports of the State Board of Agriculture is in print, and the 15th volume will soon be printed, and the appropriation of the last Legislature for binding is exhausted, and the Commissioners of State Contracts have agreed to issue to the state binder, vouchers for the amount of the binding of each report; but, because there is no money in the treasury for binding, the Auditor will not issue his warrants therefor; and,

WHEREAS, The state binder agrees to accept of said vouchers as pay for said binding, on condition that the State Board of Agriculture will make good to him any sum, not exceeding four hundred dollars, he, the said binder, may have to pay as interest on said vouchers until they are paid by the state; therefore, be it

Resolved, That the State Board of Agriculture guarantees to D. W Lusk, the state binder, a sum not exceeding four hundred dollars, as interest on vouchers for binding the reports, as stated in the foregoing preamble.

On motion of Mr. Beaty,
The committee adjourned, to meet on call of the President.

S. D. FISHER,
Secretary.

D. B. GILLHAM,
Chairman.

REPORT OF AUDITING COMMITTEE.

State Board of Agriculture:

The auditing committee would beg leave to submit the following statement of the receipts and disbursements in connection with the 26th Illinois State Fair held at Freeport, September 16-22; also the Fat Stock Show, held at Chicago, December 2-7, 1878

The expenses of the several departments of both exhibitions are given in detail

STATE FAIR

PAYING ADMISSIONS				
By 1,154 season tickets, attendance estimated		4,616	$1,731 00	
By single admission ticket (adult)		19,587	9,793 50	
By single admission ticket (child)		2,141	535 25	
By single ticket, one or two horse vehicle		1,027	513 50	$12,573 25
Paying admissions		27,371		
NON-PAYING ADMISSIONS.				
Complimentaries	2,404			
Crop reporters	79			
Delegates	57			
Employes and laborers	1,378	3,918		
Total admissions		31 289		
BOOTHS AND PRIVILEGES.				
By dining hall privileges			527 23	
By amphitheatre booth privileges			1,205 00	
By refreshment and candy stands			430 00	
By permits, stands, etc			599 80	$2,762 03
Amount received at Freeport Fair				$15,335 28

STATE FAIR—Continued.

EXPENSES OF DEPARTMENTS AT THE FAIR.	Assistant superintendents	Hotel	Livery	Meals at fair grounds	Total.	
To class A, cattle	$19 20	$14 00	$20 00	$18 33	$71 53	
" B, horses	73 95	17 50	12 00	36 34	139 79	
" C, sheep	54 20	6 50	..	23 00	83 70	
" D, swine	49 20	13 00	30 00	21 00	113 20	
" E, poultry	39 15	8 50	.....	13 66	61 31	
" F, mechanic, sec. 1	27 50	13 50	..	12 67	53 67	
" " " sec. 2	36 00	40 50	45 00	22 33	143 83	
" G, farm products	22 25	8 00	.....	23 33	53 58	
" H, horticulture, sec, 1.	38 25	14 00	... .	33 33	85 58	
" " sec 2.	30 50	15 50	... .	24 00	70 00	
" I, fine arts, } " L, natural history }	58 50	6 50	.... .	23 00	88 00	
" K, textile fabrics	88 50	19 50	8 00	25 00	141 00	
" N education	10 75	8 50	..	10 00	29 25	
To press department	12 00	....	..		12 00	
To marshal ring	55 75	16 50	24 00	25 00	121 25	
To general superintendent	54 00	15 00	35 00	155 33	259 33	
To chief of police	50 00	2 50	.	..	52 50	
To auditing committee (clerks)	109 70	42 50	64 00	98 00	314 20	
To secretary office (clerks)	125 80	34 00	.. .	56 00	215 80	
To treasurer's office (clerks)	200 00	21 00	.. .	28 33	249 33	
To president's office	. ....	16 00	.	14 33	30 33	
To reception committee	..	6 00	110 00		116 00	
To veterinarian (services)	60 00	14 00		.. . ..	74 00	
To committee on arrangments	. ... ..	28 50	..	.	28 50	
To forage department	....	4 00	37 00	43 67	84 67	
To gatemen					307 35	
To police and police justice					263 50	
To amount deducted from dining hall account for privileges					359 83	
To music on fair ground					175 00	
To lumber, stalls, etc					504 22	
To engine in machinery department					350 00	
To wood for engine					31 50	
To hauling hay and water at fair					94 25	
To use of exit ground and moving fence					90 00	
To use of furniture on fair ground					8 25	
To sundries, fixing floral hall					40 39	
To sundries for other departments					135 60	
To premiums					12,365 00	
Deficit at State Fair (not including Board expenses)					.. .	2,081 96
Grand total					$17,417 24	$17,417 24

FAT STOCK SHOW

By gate fees	$2,629 10	
By permits, etc	155 96	
By stalls and pens	239 00	
By Union Stock Yards	1 000 00	
By Grand Pacific Hotel	200 00	
By Palmer House	200 00	
By Atlantic Hotel	25 10	
By Prairie Farmer Co	50 00	
By Western Rural	50 00	
By Farmers Review	50 00	
By American Poultry Journal	25 00	4,624 06
To traveling and hotel expenses, board	598 96	
To printing and advertising	534 30	
To expenses awarding committees	141 95	
To police	96 95	
To music	235 00	
To gas bill, lighting exposition building	131 20	
To auditor's clerks	74 00	
To treasurer's clerks	66 00	
To rent exposition building	281 06	
To assistant superintendent, class C	27 50	
To labor	74 00	
To making stalls, pens, &c	307 75	

FAT STOCK SHOW—Continued.

To feed and shipping hogs and sheep stock yards	22 20	
To premiums	2,395 00	
Dificit fat stock show		451 81
Total	5,075 87	5,075 87

LEWIS ELLSWORTH,
S DOUGLAS,
CHARLES SNOAD,
} Auditing Committee.

SPRINGFIELD, ILLS., January, 1879

REPORT OF COMMITTEE ON FARMS, ORCHARDS, ETC.

State Board of Agriculture:

Your committee beg leave respectfully to report that they have performed their duty, and have made awards, subject to the decision of the Board, as follows:

There was but one entry for the premium offered for the best farm

The committee declined to recommend an award, as there was nothing presented that would entitle the farm to be considered as a model.

Best Apple Orchard, not less than 100 trees;
First premium, J. B. Spaulding, Riverton $25 00

Best Pear Orchard, not less than 100 trees:
First Premium, J. B Spaulding, Riverton..... 25 00

Best arranged, cultivated and managed Nursery of Fruit and Ornamental Trees, Shrubs and Plants:

First Premium J B. Spaulding, Riverton 25 00

The Apple and Pear Orchards the committee unanimously decided as in every respect worthy of the premium offered

The committee had in view the healthy character of the trees; productiveness and varieties of fruit best suited to market

The committee have seen the Nursery of Mr Spaulding at several times and seasons. and under different conditions, as to seasons, weather, etc

It has always been found in the most perfect condition. The trees and plants in the most healthy state of uniform and excellent growth

The nursery blocks are arranged with reference to convenience, and the whole thoroughly underdrained and kept in the most cleanly state as to weeds and trash of all kinds, presenting a uniformly excellent condition from year to year

In fact, in condition it is a model of its class, and most creditable to the business judgment of its owner

The required statement of the above exhibitor is presented herewith, describing the orchards and nursery receiving the premiums

Respectfully submitted

JONATHAN PERIAM,
D. W VITTUM, JR,
B. PULLEN,
Committee.

STATEMENT OF J. B. SPAULDING.

In placing my nursery in competition for the premium offered by you, I submit the following statement:

We commenced our nursery operations in 1858, in the city of Springfield, Ill., near the present location of the Wabash R. R shops Until 1861 we devoted 24 acres to the growth of nursery stock. We then rented 12 acres adjoining the old grounds

In 1862 we leased 30 acres, lying west of the city, and in 1865, 20 acres north of the city, all of which was prepared in the best possible manner and planted to nursery stock.

In 1866 we purchased a tract of land situated in township 16, near Riverton, Ill , on the Wabash R R., about 6 miles east of Springfield, consisting of fine timber land, of a strong clayey loam, varying somewhat on different portions of the tract, some of the

knolls containing considerable sand, and in the depressions, narrow strips of black loam. The subsoil is a reddish clay, with occasional deposits of sand resting upon clay, the whole tract inclines a little to the south, and is intersected by three low ridges, two of which extend nearly across the tract, the other about one-half way In addition to the above, we leased 30 acres adjoining the last purchase, which was planted entirely to apple grafts.

The first year (1866) a complete and extensive system of underdraining was commenced upon the tract lately purchased, and before the close of 1867, we had entirely underdrained about 70 acres, since then we have finished underdraining the entire tract, most of which would before draining, have been considered sufficiently dry for ordinary farming purposes, but the low lands between the ridges could not have been cultivated, and there were a few acres besides that could have been made available for only pasture. Between the ridges mentioned above, mains were laid of 5, 8 and 10-in. tile, 3 to 4½ ft deep, following the natural course of the depressions formed by the ridges. Connecting with the mains, laterals were laid 3 to 4½ ft deep, 30 ft. apart, of the 2, 3 and 4-in. tile, as the character of the soil seemed to require but the most of the laterals were laid of the 2-inch size This general plan was carried out through the whole system, and only varied from, as the character of the surface and economy of construction required However no great variation was found necessary, as the inclination of the surface was quite regular, and the laterals are mostly at right angles with the mains, until near the connections, where they are turned down a little to allow them to discharge their contents, somewhat in the direction of the current in the mains

In regard to the benefit derived from tile-draining, we have no doubt but what our past and future success, rests greatly on our tile-drained lands And we cannot but suppose that it would prove of the utmost benefit to the farming community if they would lay from 5 to 8-inch tile in the depressions of their lands, and so locate them, that they could at any time in the future, attach all necessary laterals.

In 1874 our nursery operations were extended by leasing (90) ninety acres of very fine rolling timber land, lying immediately south of the principal nursery, which was rapidly planted to nursery stock

This tract was especially adapted to the growing of cherry trees, and in the spring of 1876 we planted 80,000 cherry stocks, which were budded the following August with good success and made a fine stand In 1877 we again planted 80,000 cherry stocks—with the best of success in budding and growing the same In 1878 we planted over 200,000 cherry, peach, pear, plum and quince stocks, which were budded the last of July and first of August, with the most remarkable success we ever knew. We are satisfied there has been thousands of dollars lost by nursery men in budding stock too late in the season, and in not having prepared their stocks for receiving and carrying the bud Our experience in the last few years has proven to us conclusively, that pear, peach, plum and cherries can be grown in the West with great success, and we think timber land should always be used in growing nursery stock, when it is possible

Up to the present time we have not been obliged to use much manure in growing nursery stock, our nursery being on new timber soil, (except in the culture of dwarf and standard pears) In preparing the land for their culture, we use manure from a compost heap, with 6 or 8 bushels of lime and 3 or 4 bushels of salt to the acre In preparing the land for all kinds of nursery stock, we generally trench plow The leading varieties of fruit trees propagated are apple, peach, pear, plum and cherry; apples are propagated mostly from root grafts Peaches, plums, pears and cherries by budding. We first take the utmost pains to grow well the stocks on which we bud and graft, then plant in the best possible manner, taking care to keep them cultivated, and allow no weeds to grow or form seed on our grounds In 1866 at the same time we planted in apple grafts the 30 acres adjoining our Riverton tract, we planted on that and on our own grounds about 800 000 apple grafts of the leading western varieties, since then we have planted annually from 400.000 to 500,000 with a corresponding proportion of other stock But for the past few years we have been turning our attention to the cultivation of plums, peaches, pears and cherries, finding them a great success on our underdrained timber land

For several years we have propagated and grown evergreens very extensively, particularly the Irish Juniper, of which we grow from 30,000 to 50.000 per year, from cuttings, rooted under glass. When they attain a height of from 6 to 8 inches, they are taken from the green house and planted in the nursery, and afterwards trasplanted and root pruned, several times They are disposed of at wholesale and retail at all sizes, from 6 inches to 3 feet With us they have proved perfectly hardy, not having apparently been damaged by the unusually cold weather of 6 years ago Several years ago we obtained some new varieties of evergreens, and have been propagating and testing them, some of which proved a great acquisition and success; among them is the Creavitæ. It has the compact habit and symetrical form of the Irish Juniper, more rapid in growth, a beautiful shade of green, and perfectly hardy Of this we have several thousand, and are increasing the stock as rapidly as possible. Also, the Dwarf Swedish Juniper, Variagated Arbor Vitæ, and Parson's Compacta, all of which have proved very desirable and perfectly hardy Among all the old varieties of evergreens we grow largely of, is the Siberian Arbor Vitæ, which are grown from cuttings and transplanted in our grounds with great success Our present stock of evergreen, including the sizes from 1 to 5 feet, number about 150,000 Our Evergreen stock has proved to be a very profitable branch of our business, especially the new and rare varieties.

Our wholesale trade extends over a large portion of the West and South, but our largest trade, which is retail, is confined to our own State, and especially Central Illinois

In growing nursery stock, we always use the greatest care in selecting, planting and cultivating, as we are led to believe, (in fact know) that nothing short of that will insure perfect success in growing strictly first-class nursery stock.

We prune desiduous trees mostly in the months of March and April. Evergreens are generally sheared in the month of May.

Respectfully submited,

J. B. SPAULDING.

NORTH.

Block 3. Seedlings. Apples 1 year.	Block 6 Strawberries. Apples 1 year	Block 9. Apples 2 year. Pears.	Block 12. Apples 2 years
Block 2. Raspberries. Grapes. Evergreens.	Block 5. Apple Orchard American Chestnut. Roses	Block 8 Apple Orchard. Mountain Ash. Seedling Maples Weeping Ash.	Block 11. Crab apple Orchard. Cherries 1 year.
Block 1. Evergreens Ornamental. Pear Orchard. F B C A H G D	Block 4. Packing E grounds Shrubs, Roses. Ornamental Trees	Block 7 Chestnut Orchard. Pears Blackberries.	Block 10. Evergreen
	Block 13. Apples.	Block 20. Plums, Currants, Gooseberries. Rhubarb	Block 21. Apples 3 year.
	Block 14 Apples	Block 19 Apricots and Peaches	Block 22 Apples 3 year.
	Block 15 Apples.	Block 18. Peach. Cherries 2 year.	Block 23. Peach.
	k 16	k 17	24.

A Dwelling house.
B. Office, grafting cellar, etc.
C North barn.
D South barn.
E Packing shed.
F Tool house.
G Ice house
H Milk house.

Springfield Nurseries
J B SPAULDING,
Proprietor.

REPORT OF PRINTING COMMITTEE.

State Board of Agriculture:

The oft repeated request of many of our leading breeders of improved stock, to furnish plates of their prize animals, to be used in illustrating the annual reports of the Board, has been duly considered by your committee, who would recommend that to limit the number of applicants for such space, and to insure the appearance of the most creditable specimens of the several breeds, that such space be given to well executed and creditable illustrations of animals receiving sweepstakes prizes at the exhibitions of this Board. Provided, that the owners of such prize animals defray all expenses incurred

It is believed that such illustrations will serve a valuable purpose in informing the readers of our reports, concerning the rapid improvements made in breeding stock, and create additional interest in this occupation

The increasing demand upon the pages of the Annual Report makes it desirable that as much space as possible be reserved for the many valuable and pertinent papers presented

The reports of county fairs as now printed require a considerable portion of the volume which might be saved by tabulating a great portion of the matter, and your committee would recommend that all information contained in the returns of Fair organizations, except the financial exhibit be tabulated in future reports.

The great saving to the State by having all the department printing done by the State Printer at contract prices, is a matter which should receive the attention of this Board, and it is recommended that the appropriation committee of this Board take the necessary steps to have a sufficient sum provided by the General Assembly, to cover all expenses of printing and stationery required by the agricultural department, except such printing as relates to the Illinois State Fair

The following is a detailed report of the printing for the past year·

D W LUSK, SPRINGFIELD

15,000 State Fair premium lists	$499 89	
2 000 Fat Stock Show premium lists	15 00	
10,000 Drainage circulars	101 25	
112 State Fair and Fat Stock entry books	35 00	
		$ 651 14

CHICAGO EVENING JOURNAL

1,500 Posters, 2-sheet	$165 00	
5,000 Posters, 1-sheet	140 00	
8 000 Posters, ¼-sheet	60 00	
Package	3 00	
		$ 368 00

STATE REGISTER, SPRINGFIELD

Report blanks, county agricultural fairs	$ 12 50	
Assessors and county clerks agricultural statistical blanks	32 00	
Crop Report, December, 1877	203 90	
Printing and stationery, State Fair	19 75	
" " "	30 55	
" " Fat Stock Show	28 50	
" " " "	23 00	
" " " "	16 50	
		366 70

STATE JOURNAL, SPRINGFIELD.

Stationery for the Board	$ 63 05	
Printing and stationery	26 50	
Printing and stationery	3 00	
May, 1878, Crop Circular	106 60	
June, 1878 Crop Circular	94 30	
Printing and stationery	11 00	
July 1878, Crop Circular	75 10	
August, 1878, Crop Circular	109 15	
		488 70

SPRINGFIELD PRINTING CO.

Printing and stationery	63 10
	$1,734 64

Respectfully submitted

D B GILLHAM,
J L MOORE,
JONATHAN PERIAM,
S. D FISHER,
Committee.

REPORT OF COMMITTEE ON MUSEUM.

To the State Board of Agriculture

Your committee on museum beg leave to report that the $100 appropriation made by this board has been used in the procuring of glassware for the display of seeds and grains and for other necessary expenses

The following is a list of additions to the museum

WHEAT

No	Variety	Contributor	Locality
1	Braeman s velvet		Tasmania
2	White Tuscan		Victoria, Aus
3	Red winter		Jackson county Ill
4	Fyfe		Montreal, Canada
5	Frampton white		Victoria, Aus
6	Red straw		" "
7	Swedish		Sweden
8	Russian No 1		Russia
9	Lamont s prolific		Tasmania
10	Lost nation spring		Halifax, N S
11	Arnantka spring		Odessa, Russia
12	Manitoba spring		
13	Creswell s red lomas		Tasmania
14	Red May	Conrad Bornman	Belleville Ill
15	Purple straw	A Bell	Australia
16	Italian (gold medal)	Paris Exposition	
17	California	" "	Australia
18	Silesian	" "	Brunswick
19	Australian (gold medal)	" "	Mt Baker, Australia
20	Turkas	" "	" "
21	White Tuscan	" "	Warmanbool, Aus
22	Flour	" "	Silesia
23	Egyptian wheat	" "	
24	Delhi fyfe		Ontario, Canada
25	Red winter No 1	State Grain Inspection	Chicago
26	Red winter, No 2	" " "	"
27	Amber winter, No 1	" " "	
28	Long winter No 2	" " "	"
29	Winter No 2	" " "	"
30	Winter No 3	" " "	"
31	Hard Spring No 2	" " "	
32	Spring No 2	" " "	"
33	Spring No 3	" " "	"

CORN

34	Sugar		Sangamon county, Ill
35	Russian No 1	Paris Exposition	Russia
36	Russian No 2	Paris Exposition	Russia
37	Russian No 3	" "	"
38	Indian		Halifax, N S
39	Long White		
40	Large Churchill		
41	Calico		
42	Yellow Dent		
43	Conkling		
44	Hoosier Dent		
45	Hominy		
46	Howard s Early		
47	Lahman		
48	White Corn	J Williams	Cantrall, Illinois
49	Large Kentucky		
50	Strawberry		
51	Dashier		
52	Bates Fodder		
53	Johnson		
54	McKinney White		
55	Cass County Yellow		
56	Butler s Yellow		
57	Gourd Seed Calico		
58	Russel s Sweet		

CORN—Continued

No	Variety	Contributor	Locality
59	Centennial White	George M Brinkerhoff	Springfield, Illinois
60	Watseka		
61	White Dent		
62	Kentucky Flush		
63	Upton s Early		
64	Texas		
65	Mexican Sweet		
66	White Pop Corn		
67	Red " "		
68	Variegated Pop Corn		
69	Toc nail " "		
70	Carter's Speckled Pop Corn		
71	Yellow		
72	No 2	State Grain Inspection	Chicago
73	High Mixed	" " "	

BARLEY

74	Extra No 3		
75	Russian		
76	Swedish		
77	Rice		
78	Egyptian		Upper Egypt
79	Fall	William Primm	Sangamon county, Ill
80	Australian	Paris Exposition	Victoria, Australia
81	Canada	" "	
82	Scotch	" "	
83	Egyptian	" "	
84	Hulless	" "	Hempstead Long Island
85	Bald	" "	Italy
86	Australian	" "	Cape Wangaralla, Aus
87	Russian	" "	Dantzig Russia
88	English		Victoria, Aus
89	Hulled		Sweden
90	Malt	Warrenheip Distillery	Australia
91	Malt		Melbourne Aus
92	No 2	State Grain Inspection	Chicago
93	No 3	" " "	"
94	Extra No 3	" " "	"

RYE

95	Winter		Halifax Nova Scotia
96	Spring		Montreal, Canada
97	Swedish No 2		Sweden
98	Russian		
99	No 1	Paris Exposition	
100	No 2	" "	
101	No 3	" "	
102	No 4	" "	
103	No 5	" "	
104	No 6	" "	
105	No 7	" "	
106	No 8	" "	
107	No 9	" "	
108	No 1	State Grain Inspection	Chicago
109	No 2	" "	"

OATS

110	Russian		
111	Russian		
112	Australian	Edward Buckley	Victoria Aus
113	White		Montreal, Canada
114	White		Toronto "
115	Barley		Montreal, "

OATS—Continued.

No	Variety	Contributor	Locality
116	White		Tasmania
117	Norway		Sangamon County, Ill
118	White		Sweden
119	Black		Canada
110	Black		Nova Scotia
121	Aborigines	Paris Exposition	Australia
162	White	" "	Silesia
123	Scotch	" "	
124	Tartarian	" "	Melbourne, Aus
125	No 6	" "	
126	No 9	" "	Finland
127	Barley	Angus Pol on	Victoria, Australia
128	White No 2	State Grain Inspection	Chicago
129	No 2	" " "	"

BEANS

130	Long Pod		Victoria Aus
131	Southern Prolific		
132	Dwarf Bullet		Montreal Canada
133	Dun clarend bush		Halifax, Nova Scotia
134	Provincial		" " "
135	Dwarf China bush		" " "
136	Pole		" "
137	Faun		" "
138	Newington wonder		
139	Cranberry bush		
140	Red French bush		
141	Tall German wax		
142	White pea		Montreal, Canada
143	Early yellow		" "
144	Horse		Tasmania
145	Early yellow six weeks bush		
146	White		Nova Scotia
147	Horse		Sweden
148	Red eye bush		China
149	Early brown six weeks bush		
150	Royal pole		Halifax N S
151	White Dutch case knife		
152	Sewee		North Carolina
153	Fall butter		Canada
154	Horticultural		Quebec
155	Red speckled valentine bush		
156	Royal dwarf kidney bush		
157	Fiji		
158	Marrowfat		Montreal, Canada
159	Scarlet runners		
160	Brown speckled valentine bush		
161	Egyptian		
162	Pottawattamie bush		
163	Egyptian	Paris Exposition	
164	Canadian	" "	
165	Dwarf kidney	" "	
165	Egyptian field		
166	Kidney		

PEAS

167	Black eye marrow		
168	McLean s little gem		
169	Blue imperial		
170	Field		
171	White		Sweden
172	Early Marrowfat		Montreal, Canada
173	Blue Prussian		
174	Large White Marrowfat		
175	Green		
176	Spanish		

PEAS—Continued

No	Variety.	Contributor	Locality.
177	Marrow		Sweden
178	Fodder		Victoria, Aus
179	Yellow Field		Quebec, Canada
180	Swedish		
181	Champion of England		
182	Peruvian black eye marrow-fat		
183	Landreth's extra early		
184	Yorkshire hero		Victoria, Aus
185	Sugar		Egypt
186	Sugar		Sweden
187	Early frame		
188	Tom Thumb		
189	Early dwarf		Quebec
190	Italian	Paris Exposition	
191	Silesian	" "	
192	Canadian	" "	
193	Egyptian	" "	
194	Egyptian	" "	
195	The pea imposed upon the public during the rebellion as the coffee plant from Egypt	Paris Exposition	

SUGAR

196	Sugar beet	Charles H Rosenstiel	Freeport, Illinois
197	"		Queensland, Australia
198	"		Mona estate, Jamaica
199	"		Albion estate, "
200	"		Whitney estate, "
201	"		Brazil
202	"		ConstantSpring estate, Ja
203	"		Rio Janeiro, Brazil
204	"		Pernambuco, Brazil

COFFEE

205	Coffee		San Paulo, Brazil.
206	Coffee (in the inner husk)		Brazil
206	Coffee		Rio Janeiro, Brazil
207	"		Machado, "
208	"		Bahia, "
209	"		New Gazan, "
210	" (Rio No 4)		Brazil
211	"		DeMinas, Brazil
212	" (Rio No. 1)		Brazil

CLOVER, TIMOTHY, ETC.

213	Clover seed		Alsey, Illinois
214	" "		Russia
215	" " (red)		Sweden
216	" " (white)		Sweden
217	Timothy seed		Illinois
218	" "		Russia
219	" "		Sweden
220	Hungarian grass		Illinois
221	Lawn grass		Lee county, Illinois

WOOL.

No.	Variety.	Contributor.	Locality.
222	Cotswold	J. L. Newman.	West Jersey, Illinois
223	Cotswold	" "	" " "
224	Cotswold	" "	" " "
225	Cotswold	" "	" " "
226	Leicestershire	Charles F. Mills.	Springfield, Illinois
227	Leicestershire	J L Newman	West Jersey, Illinois
228	Cotswold		New South Wales
229	Cotswold		Queensland, Australia
230	Cotswold		Tasmania
231	Cotswold No 9		Canada
232	Cotswold cross		Canada
233	Cotswold No 9		Queensland, Australia
234	Cotswold No 9		Victoria, Australia
235	Cotswold No 10		Victoria Australia
236	Merino extra		Canada
237	Merino double extra		New South Wales
238	Merino No 1		" " "
239	Merino No 2		" " "
240	Merino extra		" " "
241	Merino		Queensland, Australia
242	Merino No 1		" "
243	Merino No. 2		" "
244	Merino No 3		" "
245	Merino No 1		Tasmania
246	Merino No 2		"
247	Merino No 3		"
248	Merino extra		"
249	Merino double extra		"
250	Merino No 1		Spain
251	Merino No 1		Illinois
252	Merino, extra		Victoria, Australia
253	Merino No. 1		" "
254	Merino No 2		" "
255	List		Spain
256	Rough Brazilian		Brazil
257	Common No 5		Spain

MISCELLANEOUS—SEEDS, ETC

258	Castor beans		
259	Asparagus, Conover's colossal		
260	Onion, Danver's yellow		
261	Onion, London leek		
262	Onion, Wethersfield, large red		
263	Flax		Egypt
264	Flax		Silesia, Prusia
265	Salsify seed		
266	Honey locust		Egypt
267	Gourd		Lower Egypt
268	Vetches		Sweden
269	Pine nuts		Brazil
270	Sorghum Seed		Jamaica
271	Egg plant		
272	Prickly seeded spinach		
273	Tares, black		Quebec
274	Tares, golden		Tasmania
275	Hemlock		Sweden
276	Senna		Soudan, Africa
277	Millet, Russian.		Russia
278	Mustard	Joseph Nampel	Freeport, Ill
279	Hemp		Spain
280	Carrott, orange		
281	Celery, large white		
282	Radish, summer white		
283	" red turnip		
284	" black Spanish		
285	" scarlet strap leaved		
286	Turnip	Paris Exposition	Egpyt
287	Beet, early blood turnip		Brazil
288	" early turnip		Egypt
289	" extra turnip.		Bassano, Italy
290	Lettuce, curled		Silesia
291	" brown Dutch		

MISCELLANEOUS—Continued.

No.	Variety.	Contributor.	Locality.
292	Okra		Egypt
293	Tea		Jamaica
294	" coffee leaf		"
295	Melon, Casaba		Persia
296	" nutmeg		
297	Kale, dwarf		Germany
298	Benne, oil seed		
299	Fenugreek		Egypt
300	Cutch		Calcutta
301	Blue gum tree		Tasmania
302	Blackwood tree		"
303	Cotton seed		Brazil
304	" "		Illinois
305	" "		Upper Egypt
306	Spinach, large round	Goo S. Haskell	Rockford, Ill
307	Buckwheat		Montreal, Canada
308	Rice		Spain
309	Marcella		"
310	Bone meal		Sweden
311	Rice starch		Brazil
312	Starch of tapioca		Para, Brazil
313	Salt		Tasmania
314	Tinder for flint steel		
315	Silk cocoons		Brazil
316	Silk fibre		"
317	Sea weed		Jamaica
318	Reindeer moss		Sweden
319	Ammoniated bone	L L Crocker	Buffalo, N Y
320	Plant food	" "	" "
321	Pure ground bones	" "	" "
322	Cochineal		Teneriffe, Is
323	"		Canary, Is
324	"		Los Palmas, Brazil
325	Bone black		Sweden
326	" ash		"
327	Lignum vitæ		Jamaica

The limited number of cases has prevented as systematic an arrangement of what we have, as is most desirable for reference and comparison, and your committee would recommend that an appropriation of at least one thousand five hundred dollars per year, for the next two years, be asked of the Legislature now in session

During the year the following additions have been made to the entomological section of the museum by Prof. Cyrus Thomas, State Entomologist They are systematically arranged in the drawers of the cabinet.

LEPIDOPTERA (Butterflies and Moth.)

Butterflies.

	Specimens
Papilio philenor	3
asterias	3
troilus	3
turnus (yellow var)	2
" vargiaucus (black)	1
cresphontes	2
ajax, var marcellus	2
ajax, var walshii	1
Pieris rapæ	4
protodice	6
vernalis	1
Nathalis iole	3
Callidryas eubole	3
Colias cæsonia	4
eurytheme	4
kewaydin	2
philodice	6
Terias nicippe	2
lisa	4
Danais archippus	3
Euptoieta claudia	2
Argynnis myrina	2
idalia	2
cybele	2
aphrodite	2
Phyciodes tharos	3
Militæa carlotta	1
nyctis	2
Grapta interrogationis (var umbrosa)	3
(var fabricii)	4
comma	2
Vanessa antiopa	6
Pyrameis huntera	4
cardui	4
atalanta	4
Junonia lavinia	4
Limenitis ursula	4
misippus	2
Paphia glycerium	2
Apatura clyton	1
Libythea bachmannii	2
Neonympha eurytus	4
Lethe portlandia	2
Satyrus nephele	2
Chrysophanus americanus	1
thoe (hyllus)	2
Lycæna epixantha	2
pseudargiolus	1
violacea	2
Polyommatus comyntas	6
Thecla acadica	1
strigosa	2

BUTTERFLIES—Continued.

	Specimens		Specimens.
Endamus tityrus	3	peckii	1
bathyllus	2	manataaqua	1
Achalarus lycidas	1	metacomet	1
Pamphila phylæus	1	vialis	1
hobomok	1	Pholisora catullus	1
cernes	4	Pyrgus syrichthus	2
huron	2		

(65 species Butterflies and 164 specimens.)

SPHINGES.

	Specimens.		Specimens.
Sesia diffinis	2	Ceratomia amyntor	1
Deilephila lineata	4	Macrosila carolina	2
Philampelus pandorus	1	5-maculata	1
Darapsa myron	2	Chaerocampa tersa	2
Smerinthus excæcatus	1	Ctenucha fulvicollis	2
juglandis	1		

(11 species Sphinges and 19 specimens.)

MOTHS

	Specimens		Specimens
Methesia bella	2	Actias luna	1
Callunorpha fulvicosta	2	Eucroma maia	2
militaris	1	Hypherchiria io	2
interrupto marginata	1	Ceratocampa imperialis	1
Arctia isabella	2	Catocala epione	2
phalerata	2	retecta	1
dione	2	flebilis	1
rectilinea	2	obscura	1
Leucaretia acræa	2	insolabilis	1
Spilosoma virginica	2	unijuga	1
Hyphantria textor	2	amatrix	1
Halesidota tessellaris	1	cara	1
Thyridopteryx ephemeraeformis	1	ilia	2
Datana ministra	1	paleogama	1
" (Black walnut var)	1	piatrix	2
" (Oak var)	1	scintillans	1
" (Sumac var)	1	innubens	4
anglesa	2	neogama	1
Nadata gibbosa	1	ultronia	2
Dryocampa rubicunda	2	polygama	1
stigma	2	grynea	3
Gastropacha velleda	1	amica	1
Clisiocampa americana	2	fratercula var atarah	1
Attacus polyphemus	2		
promethea	2		
cecropia	2		
cynthia	1		

Respectfully,

D. B. GILLHAM,
H. D. EMERY,
S. D. FISHER,
Committee.

REPORT OF LIBRARY COMMITTEE.

State Board of Agriculture:

Your committee on library beg leave respectfully to report as follows:

The sum of $2,000 appropriated by the General Assembly for the years 1877 and 1878, to be expended under the authority of the Board for furnishing the library with suitable text and other books, has received the attention of your committee.

At the first meeting of the committee in Chicago, it was decided that the library fund should be applied first to the purchase of text books on agriculture, next, horticulture, live stock, veterinary and farm buildings, implements, etc., reserving miscellaneous works for the future.

The chairman was requested to confer with publishers in relation to the best terms and facilities for getting the works wanted

Messrs. Jansen, McClurg & Co , of Chicago, offered the best terms except upon some standard agricultural text books, these Prairie Farmer Company, Chicago, agreed to furnish, the basis agreed upon in each case being 30 per cent off, except in cases noted in the list of books. See vouchers on file

The following list comprise the various works in the library which the committee respectfully request may be published in the next annual report

The total amount paid for books the past year is $1,173 68

The clip files bought of Messrs John R Barrett, of Chicago, the discount given the Board being 50 per cent. from catalogue prices

The binding of the serial works and pamphlets on hand was given to the Springfield Journal Company, of Springfield, they making the lowest bid

The committee think that when the books now ordered and not yet received, come to hand, it will leave a sum quite small enough to carry the library fund until July 1, 1879

There is still work in the hands of the binder, that with the work ordered, will increase the expense for library

It is hoped that this collection will form the nucleus of a library of agricultural and scientific works not found in the private libraries of the state, for the accomodation of the people of the state, who may need to examine them

A number of the works bought are out of print and as rare as they are valuable

In conclusion the committee would earnestly recommend that the Legislature continue the appropriation to the library fund, as among the most important acquisitions possible

All of which is respectfully submitted

JONATHAN PERIAM,
GEORGE S HASKELL, } Committee.
S. D FISHER,

LIST OF BOOKS—ANIMALS

No	Title of work	Author
1	Animals -Naturalist's Library-	Wm Jardine, Bart Vol 1
2	" " "	" " " Vol 2
3	" " "	" " " Vol 3
4	" " "	" " " Vol 4
5	" " "	" " " Vol 5.
6	" " "	" " " Vol 6
7	" " "	" " " Vol. 7
8	" " "	" " " Vol. 8
9	" " "	" " " Vol. 9
10	" " "	" " " Vol 10
11	" " "	" " " Vol 11
12	" " "	" " " Vol 12
13	" " "	" " " Vol 13
14	Animals, Public and Private Life of	
15	Animals and Plants under Domestication	Darwin
16	Animals Domesticated, Comparative Anatomy of the	A Chauveau
17	Animals, Domestic	L F Allen
18	Animals, Laws of Domestic	
19	Animals, Breeding Domestic	Goodale
20	Animals, The Domesticated	Prof Low
21	Animals, History of the Habits and Instincts	Bohn Vol 1.
22	Animals, History of the Habits and Instincts	Bohn Vol 2
23	Animals, Food for	Thompson
24	Antelope and Deer of America	Caton
25	Cattle	Youatt & Martin
26	Cattle, Soiling of	Josiah Quincy
27	Cattle, American.	L F Allen
28	Cattle, Diseases of	U S. Dep't Agl
29	Cow, Jersey, Alderney or Gurnsey	
30	Dog, The	Stonehenge
31	Horse Book,	F Dwyer
32	Horse Shoeing	Wm Douglass
33	Horse Portraiture.	Simpson
34	Horse Book	Dr Geo H. Dadd
35	Horse Management (Illustrated)	Mayhew
36	Horse, The Percheron	C DuHuyt
37	Horse in Stable and Field	J W. Walsh
38	Horse Doctor, (Illustrated).	Mayhew
39	Horse of America, The Trotting	Hiram Woodruff
40	Horse in the Stable and Field	Stonehenge
41	Horses, Famous American	
42	Horses of America.	Frank Forrester, Vol. 1.
43	" " "	" " Vol. 2
44	Horses Foot.	William Miles
45	Horse, The	Youatt & Spooner.
46	Horse, The	Stonehenge
47	Horses, Pictorial Gallery English Race.	Geo Tattersall
48	Horses, Morgan.	Linsley.

ANIMALS—Continued

No	Title of work	Author
49	Horsekeepers, Hints to	Frank Forrester
50	Horsemanship, New Method	F Baucher
51	Hog, The	Youatt & Martin
52	Mule, The	Harvey Riley
53	Pig Harris on the	
54	Rinderpest,	A B Conger
55	Swine, A practical Treatise on Diseases of	Brusson
56	Swine, Husbandry	F D Coburn
57	Sheep, Swine and Poultry	
58	Sheep	Youatt
59	Sheep Husbandry	Randall
60	Sheep, Fine Wool	Randall
61	Shepherd, American	Morrell
62	Shepherd Practical	Randall
63	Shepherd s Manual	Stewart

ARCHITECTURE

64	Architecture, Cottage, Farm and Villa	
65	Architecture, Rural	Allen
66	Architecture	Cummings & Miller
67	Architecture, School house	
68	Architecture, Detail Cottage and Constructive	A J Bicknell & Co
69	Architecture, National Cottage	Hussey
70	Barns &c	Harney
71	Country Houses	Wiedenman
72	Country and Suburban Houses	Atwood
73	Carpenters and Joiners Hand Book	
74	Carpenters and Builders Guide	
75	Rural Homes	Wheeler

BEES

76	Bee The Honey	Langstroth
77	Bee-keeping	Quimby
78	Bee-keepers Text Book	N H & H A King
79	Manual of the Apiary	Cook

BOTANICAL

80	Botanic Terms Manual	M C Cook
81	Botany, Lessons in	Gray
82	Botany School and Field Book	Gray
83	Botany, Field	Agnes Catlow
84	Botany Garden	Agnes Catlow
85	Botany, Greenhouse	Agnes Catlow

CHEMISTRY

86	Chemistry of the Farm and Sea	Nichols
87	Chemistry, Agricultural	Johnson
88	Chemistry, Experimental	Stockhart & Heaton (Bohn)
89	Chemistry, Agricultural	Henfrey (Bohn)
90	Chemistry Encyclopedia of	Booth & Morfit
91	Chemistry, Inorganic and Organic	Bloxam

DAIRY

92	Milch Cows	Guenon
93	Milch and Dairy Farming	Flint
94	Practical Dairy Husbandry	Willard
95	Practical Butter Book	Willard

ENTOMOLOGY

No	Title of work	Author
96	Entomology British	Agnes Catlow
97	Entomology of North America	Say Vol 1
98	" " "	" Vol 2
99	Entomology, Manual of	W E Shuckard
100	Internal Parasites	
101	Insects Guide to the Study of	Packard
102	Insect Architecture	J C Wood (Bohn)
103	Insects, Naturalist s Library Vol 1	
104	" " " Vol 2	
105	" " " Vol 3	
106	" " " Vol 4	
107	" " Vol 5	
108	" " " Vol 6	
109	" " " Vol 7	
110	Insects, The Life of North American	B Jaeger
111	Insects, Harris Injurious to Vegetation	Flint
113	Insects Westwood on Vol 1	
114	Insects, Westwood on Vol 2	

FARM AND GARDEN

115	American Home Garden	Watson
116	American Vegetables of	Burr
117	American Farm Book	Allen
118	American Agriculturist 1878	
119	Book of the Farm	Waring
120	British Husbandry—Library of Useful Knowledge	Vol 1
121	" " " "	Vol 2
122	" " " " "	Vol 3
123	Complete Farmer and Gardener	Fessenden
124	Cottage Gardener 1865	
125	" " 1848 49	
126	" " 1849 50	
127	" " 1850 51	
128	" " 1851 52	
129	" " 1852 53	
130	" " Vol 13 25	
142		
143	" " 1865	
144	" " 1866 vol 1	
145	" " 1866 vol 2	
146	" " 1867	
147	Crops, How Grow	Johnson
148	Crops How Feed	Johnson
149	Draining for Profit and Health	Waring
150	Drainage Land	Klippart
151	Elements of Agriculture	Waring
152	" "	Norton
153	Farm Implements and Machinery	J J Thomas
154	Farm World	
155	Farmer s Dictionary	Vol 1
156	"	Vol 2
157	Farmer's Library	Saxton, vol 1
158	" "	Saxton vol 2
159	" "	Saxton vol 3
160	Farmers Facts for	Robinson
161	Farm Garden and Orchard, Irrigation for	Stewart
162	Flax Culture	
163	Gardening Landscape	Downing
164	Gardener "	Repton
165	Gardening for Pleasure	Henderson
166	Gardening for Profit	Henderson
167	Garden Text Book	Schenck
168	Garden Money in the	Quinn
169	Gardeners The Wirdoo	Rand
170	Handy Book of Husbandry	Waring
171	Manures Talks on	Harris
172	Manures American	W H Bruckner
173	Rural Economy	
174	Rural Studies	Donald G Mitchell
175–180	Rural Affairs	J J Thomas, vols 3-8

FARM AND GARDEN—Continued.

No	Title of Work.	Author.
181	Sorgho and Imphee	Olcott
182	Sorghum and Its Products	Stewart
183	Stock Breeding	Miles
184	Vegetable World	Louis Figuer
185	Wheat: Its Culture, Diseases, etc	Klippart

FISH.

186	Aquarium	Sowerby
187		
192	Fishes, Naturalist's Library, Vols 1 to 6	
193	Fishing in American Waters	Genio C. Scott
194	Trout Culture	Slack

FLOWERS AND PLANTS

195	American Weeds and Useful Plants	William Darlington
196	Book of Evergreens	Hoopes
197	British Ferns	Morris
198	British Mosses	Stark
199	British Sea Weeds	Landsborough
200	British and Foreign Ferns	Smith
201	Bulbs	Rand
202	Climbing Plants	Darwin
203	Encyclopedia of Plants	Mrs Loudon, Vol 1
204	" "	" Vol 2
205	Fern World, The	Francis Geo. Heath
206	Flowers for Parlor and Garden	Rand
207	Floriculture	Henderson
208	Flora of North America	Torrey & Gray, Vol 1
209	" "	" Vol 2
210	Flowers, Garden	Rand
211	Flower Garden, The	Breck
212	Flowers, Our Useful Wild	Sowerby
213	Flowers, Popular	Rand
214	Fungi	M C Cook
215	Fungi, Microscopic	M C Cook
216	Grasses and Forage Plants	Flint
217	How Plants Grow	Gray
218	Hand Book of Grasses of Great Britain	Henderson
219	Hedges and Evergreen	Warder
220	Insectivorous Plants	Darwin
221	Orchid Culture	Rand
221	Orchids, Fertilization by Insects	Darwin
223	Parsons on the Rose	
224	Plants of the United States	Gray Vol. 1
225	" " " "	Gray Vol 2
226	Plants of the World	Daubeny
227	Plants, Useful	Johnson
228	Rhododendrons	Rand
229	Trees, Plants and Flowers	

FRUIT

230	American Fruit Culturalist	Thomas
231	American Pomology	Warder
232	Cranberry Culture	White
233	Fruit Garden	Rivers
234	Fruit Garden	Barry
235	Fruits and Fruit Trees of America	Downing
236	Grapes and Wine	Hararthy
237	Grapes and Wines	Husman
238	Grapevine	Mohr
239	Hand Book of the Grapes of Great Britain and America	Henderson
240	Peach Culture	Fulton
241	Small Fruit Culturist	Fuller
242	Strawberry	Merich

GEOLOGY AND MINERALOGY

No	Title of work	Author
242	Geology	Mantell (Bohn) Vol 1
243	"	" " Vol 2
244	Geology, Manual of	Dana
245	Geology, Principles of	Lyell
246	Geology and Mineralogy	Buckland
247	Mineralogy	Dana

ORNITHOLOGY

No	Title of work	Author
248	Birds U S	Bailey
249	Birds Naturalists Library	Vols 1-14
262		
263	Birds, Humming	Naturalist s Library
264	Birds, Our Own	Bailey
265	Birds, Key to North American	Elliott Coues
266	Ornithology	Wilson Vols 1 3
269		
270	Ornithology Hand Book of Northwestern	Elliott Coues
271	Pigeons, Book of	R Fulton

PHYSIOLOGY

No	Title of work	Author
272	Animal Physiology	Carpenter (Bohn)
273	Animal and Vegetable Physiology	Roget, Vol 1
274	" " "	Vol 2
275	Vegetable Physiology	Carpenter (Bohn)

POULTRY

No	Title of work	Author
276	Poultry	Tegetmeier
277	Poultry Breeding, Geyelin s	Flint
278	Poultry Book of	Wright
279	Poultry American Companion	Bement
280	Poultry Keeper, Practical	Wright

SCIENCE

No	Title of work	Author
281	Sciences, Philosophy of	Lewes
282	Science Byways	Proctor
283	Science Borderland of	Proctor
284	Science Dictionary of	Rodwell
285	Science Gossip 1874	
286	Science Gossip 1875	
287	Science Text Books of	Anderson
288	Science, Molecular and Microscopic	Summerville
289	Science and Industry Annual Record of 1871 to	
295	1877	
296	Science Household Hand Book of	Youman

SPORTING

No	Title of work	Author
297	American Angler	Norris
298	American Game in its Season	Frank Forrester
299	Field Sports	Frank Forrester, Vol 1
300	"	" " Vol 2
301	sh and Fishing	
301	Turf Register and Racing Calendar, Vols 1 to 6	
307		

TAXIDERMY

No	Title of work	Author
308	Taxidermists Manual	Thos Brown

TREES

309	Evergreens	Hoops
310	Forest Tree Culturist	Fuller
311	History of the Palm	Seeman
312	Trees and Shrubs	Mrs Loudon

VETERINARY

313	Veterinary Medicine	Williams
314	Veterinary Medicine	Dun
315	Veterinary Adviser	Law
316	Veterinary Art	Percival Vol 1
317	" "	" Vol 2
318	" "	" Vol 3
320	Modern Horse Doctor	Dadd

ZOOLOGY

321	Zoology—Carpenter	Bohn Vol 1
322	" "	" Vol 2
323	Zoology Comparative	Orton

MISCELLANEOUS

324–339	American Cyclopedia, Vols 1 to 16	
340	Atlas and Gazette	Rand & McNally
341	Astronomy Hinds	(Bohn)
342	Amazons The Naturalist on the	Bates
343	Atmosphere The	Camille Flammarion
344	Ancient Life History of the Earth	Nicholson
345	Atlas Standard	Walker
346	Beet Root Sugar	Grant
347	Bits and Bearing Reins	Fowler
348	Campaign on the Illinois	Clarke
349	Cider Maker s Manual	Buell
350	Civil War	Lossing Vol 1
351	" "	" Vol 2
352	" "	" Vol 3
353	Climatology of the United States	Blodgett
354	Coin Book	Mushet
355	Conchology, British	Sowerby
356	Cotton Manufacture	Ure (Bohn), Vol 1
357	" "	" " Vol 2
358	Color	Chevreul (Bohn)
359–362	Cosmos, Humboldt's	(Bohn), Vols 1 to 5
364–366	Contributions to Molecular Physics in the Domain of Radiant Heat	Darwin
366	Crustacea British	White
367–376	Cyclopedia	Chambers, Vols 1 to 10
377	Cyclopedia of Agriculture	Morton, Vol 1
378	" " "	" Vol 2
379	Dictionary of Classical Quotations	Bohn
380	" " " "	Bohn
381	Dictionary of Authors	Allibone, Vol 1
382	" " "	" Vol 2
383	" " "	" Vol 3

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No.	Title of work.	Author.
384	Dictionary Webster's Unabridged	
385	Entertaining Naturalist	Mrs. Loudon (Bohn)
386	Earth, The	Elisee Reclus
387	Fermentation	Scheitzenberger
388	First Century of the Republic	
389	Food from the Far West	Macdonald
390	Genesis of Species	Mivarts
391	Ground Swell, The	Periam
392	Homes without Hands	Rev J G Wood
393	Human Race, The	Louis Figuer
394	Indigenous Races of the Earth	Nolt & Gliddon
395	Illustrated Library of Wonders	De Vere
396	Illinois in 1837	
397	Illinois as it is	Gerhard
398	Illinois, Pioneer's History of	Reynolds
399	Illinois, Patriotism of—Vol 1	
400	" " "—Vol 2	
401	Illinois, History of	Davison & Stuve
402	Lessons from Nature	Mivart
403	Milk Analysis	Wanklyn
404	Muck Manual	Dana
405	Monopolies and the People	D C. Cloud
406	" " "	"
407	Mythology	Keightley (Bohn)
408	Natural Selections, On	Wallace
409	Ocean, The	Elisee Reclus
410	Origin of Species	Darwin
411	Painters, Sculptors, Architects and Engravers	Clement
412	Painter, Gilder and Varnisher	
413	Peat and its Uses	Johnson
414	Philosophy of Manufactures	Ure (Bohn)
415	Philosophy Mechanical, and Astronomy	Carpenter, (Bohn)
416	Quotations, Prose	Allibone
417	Quotations, Poetical	Allibone
418	Quotations, Latin and Greek	
419	Roget's Thesaurus of English Words	Sears
420	Storms	Blasius
421	Types of Mankind	Nolt & Gliddon
422	Technical Analysis	Bolly & Paul
423	" "	" "
424	Weights, Measures and Money	Clark
425	Zoophytes, British	Landsborough

HERD BOOKS, ETC.

426–443	American Herd Book (Short Horn)	Allen, Vol. 1-18
444–446	American and Canadian Ayrshire Herd Book, Vols 1-3	
447–450	American Devon Herd Book	Sessions, Vols. 1-4
451–453	American Stud Book	Bruce, Vols 1-3
454–458	American Jersey Cattle Club Herd Book, Vols. 1-5	Geo. E Warring
459–461	American Berkshire Record, Vols. 1-3	O. M. Springer
462–468	American Short Horn Record	Evans, Ed., Vols 1-7
469–473	American Jersey Herd Book	O. B. Hadwin, Sec., Vols. 1-7
474	American Cotswold Record	C. P Willard, Sec , Vols 1
475–476	Ayrshire Record Vols 1-2	
477–478	Devon Herd Book	S Howard, Vols. 1-2
479–501	English Herd Book, (Shorthorn)	Coates, Vols. 1-23
502–514	English General Stud Book	
515	Herd Record. Thoroughbred. Neat Stock. 1863	

HERD BOOKS, ETC.—Continued.

No.	Title of work	Author.
516 524	Herd Book, Hereford Cattle	T. Duckham, Vols 1-9
525 527	Holstein Herd Book	C Houghton, Ed , Vols 1-3.
528	Ohio Poland China Record, Vol , 1	
529	Percheron Stud Book	J. H Saunders, Sec , Vol 1
530	United States Merino Register	
531	Wallace, American Trotting Register	Wallace
532	Wallace, American Stud Book, Vol 1	Wallace

REPORTS, ETC.

CALIFORNIA

533. Agricultural College, 1873, 1875
534-542 Agricultural Reports, 1859, 1863, 1864-1865, 1866 1867, 1868-1869, 1870-1871, 1872, 1873, 1874

CANADA.

543 Canadian Exhibitors, Philadelphia, 1876.
544 Canada, Minerals of, 1876
545-552 Canada, Upper, Agricultural Reports of, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863
553-554 Canadian Dairymen's Association, 1869, 1870
555-563 Ontario, Province of, Agricultural Reports, 1856, 1857, 1858-1859, 1863, 1869, 1870, 1871, 1875, 1876
564-572 Quebec Province of Agricultural Reports, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876
573. Quebec, Emigration to 1870

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574-587. Agricultural Reports, 1854, 1855, 1856, 1866, 1867, 1868, 1869, 1871, 1872, 1873, 1874, 1875, 1876, 1877

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588-592 Florida Agricultural Report, by Com of Immigration, 1870, 1871, 1872. 1873, 1874

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593-595. Agricultural Report 1873, 1874, 1875
596. Hand Book of Georgia, 1876

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597-604 Adjutant General's Report Vols 1, 2, 3, 4, 5, 6, 7 8
605-619. Agricultural Report Vols 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
620-626 Agricultural and Industrial University report Vols 1, 2, 3, 4, 5, 6, 7.
627-632 Auditor's Report 1869, 1870, 1871, 1872, 1873, 1874.
633 Board of Public Charities Report 1874
634 Chicago Board of Trade 1858 64
635-636 Dairymen's Association 1874, 1875
637. General Assembly, Reports to. 27th Session
638-641. General Assembly, Reports to 1877 Vols. 1, 2, 3, 4.
642 Geological Survey of Illinois. Worthen
643-647 Geological Survey of Illinois Vols 1, 2. 3, 4 5, 6
648-659 Horticultural Report 1864 1866, 1868, 1869, 1870, 1871, 1872, 1873, 1875, 1876, 1877, 1878
660 Journal, House 1877.
661 Journal, Senate. 1877
662-664 Laws of Illinois 1873, 1875, 1877
665-673 R R and W H Commissioners Report. 1870, 1871, 1872, 1873, 1 7 , 1875, 1876, 1877, 1878
674-675 Secretary's Report, 1876, 1878
676-679 Supt Public Instruction, 1857, 1858, 1875, 1876
680-681 Statutes of Illinois, 1856, Parts 1, 2.
682 Treasurer's Report 1876
683 Universal Exposition, 1867.

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684-695. Agricultural Report, 1851, 1852, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877.
696. Agricultural and Mechanical College.
697-702 Geological Report, 1868, 1870, 1872, 1873, 1874, 1875.

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703-705 Agricultural College Report, 1864 1868, 1870
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726 Horticultural Report, 1871, 1872

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727-730 Agricultural Report 1872, 1873, 1874, 1875
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736. Agricultural College Report, 1875.

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737-765 Agricultural Reports, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878
766 Water Power of Maine
767-771 Fish Commissioners' Report, 1867, 1868, 1869, 1870, 1871

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772-785 Agricultural Report, 1858, 1859, 1860, 1863, 1867-1868, 1868-1869 1869-1870, 1870 1871, 1871-1872, 1872-1873, 1873-1874 1875, 1876, 876-1877 1877-1878
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793 Board of Health Report, 1871
794-799 Horticultural Report, 1870, 1871, 1872, 1873, 1876, 1877.

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800-819 Agricultural Report, 1849, 1851, 1852 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1865, 1868, 1869, 1871, 1872, 1873, 1874, 1875, 1876, 1877
820 Agricultural College Report, 1875.
821 Geological Report 1860.
822-826 Pomological Report, 1873, 1874, 1875, 1876, 1877
827-828 Statistics, 1854, 1864

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829-832 Agricultural College Report 1871, 1872, 1873, 1874
833-835. Horticultural Report, 1866 73, 1874, 1875
836. Statistics, 1870
837-838 University of Minnesota, 1871, 1873

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839-844 Agricultural Report, 1865, 1866, 1867, 1868, 1870, 1875
845 Agricultural College Report, 1872
846-847. Geological Survey Vols 1, 2.
848-849 Statistics, 1866 1867
850-853 St Louis Fair Report, 1858, 1859 1866, 1867
854-855. University of Missouri, 1872, 1876

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856-858. Agricultural Report, 1869, 1871, 1873
859-860. Horticultural Report, 1871, 1872.

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861 Agriculture, Department of, 1868

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868 Agricultural College Report, 1875.
869. Geology of New Jersey, 1869-74.
870-876. Geological Report, 1868, 1869, 1870. 1871, 1872, 1873, 1874.

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877. Agricultural College Report, 1875-76
878-909 Agricultural Report 1841 1842 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1854, 1855, 1857, 1858, 1859, 1860, 1861, 1865, 1866 1867, 1868, 1869, 1870, 1871 1872, 1873, 1874, 1875, 1876
910-915. Report of New York Produce Exchange, 1872, 1873, 1874, 1875, 1876, 1877

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916. Geology of North Carolina, Vol. 1, 1875
917. Hand Book of North Carolina L. L. Polk.

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918-945. Agricultural Report, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876
946 Agricultural College Report, 1874
947 Horticultural Report

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948. Agricultural Report, 1870

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949-954. Agricultural Report, 1855, 1871-2, 1872-3, 1873-4, 1875, 1877.
955-957. Agricultural College Report, 1869, 1874, 1875.

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958-976. Agricultural and Industrial Report, 1851, 1854 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1874.

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977-980. Agricultural Reports, 1869, 1871, 1872, 1873

TENNESSEE

981-985. Agricultural Report of 1856, 1876, 1877, 1878
986 Tennessee Grasses, 1878. Killebrew
987. Tennessee Resources, 1876 Killebrew
988 Tobacco and Wheat, 1876-1877 Killebrew.

VERMONT.

989-997. Agricultural Report, 1857, 1858, 1872, 1873, 1874, 1875, 1876, 1877, 1878
998-1000. Dairymen's Association, 1869, 1870, 1872, 1874, 1875, 1877

VIRGINIA

1001 Agricultural College Report, 1874.

VICTORIA.

1002-1004. Department of Agriculture, 1873, 1874, 1875

WISCONSIN

1005-1016 Agricultural Report, 1859, 1860, 1861-8, 1869, 1870, 1871, 1872-3, 1873-4, 1874-5, 1875-6, 1876-7, 1877-8
1017-1020 State Historical Society Report, 1873, 1874, 1875, 1876.

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1021-1040 American Institute, 1847, 1848, 1849, 1850, 1851, 1852, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1862, 1863, 1864, 1865-6, 1866-7, 1868-9, 1869-70.
1041 Brazil Centennial Exhibition catalogue, English.
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1044 Compendium of the 9th U S. Census, 1870
1045-1048 Commission of Education, U S , 1872, 1874, 1875, 1876.
1049 Fourth Annual Insurance Report, 1872.

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1089-1094. Messages and Documents, 1857-8, 1858-9, 1864-5, 1869-70, 1870-71.
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The following exchanges have been regularly received during the past year, and have been placed on the reading desks for the use of the public:

Name of paper.	Location	Publisher
Prairie Farmer	Chicago	Prairie Farmer Co
Western Rural	"	Milton George
Western Farm Journal	" and DesMoines	G. Sprague
American Poultry Journal	"	C J Ward
Country Gentleman	Albany, N Y	Luther Tucker & Son
Pantagraph	Bloomington	W O Davis
Gazette	Jonesboro Ill	T. F Bouton
Western Agriculturist	Quincy, Ill	T. Butterworth
National Live Stock Journal	Chicago, Ill	Stock Journal Co
Turf, Field and Farm	New York City	Turf, Field & Farm Association
Coleman's Rural World	St Louis, Mo	N. J Coleman
California Farmer	San Francisco, Cal	Warren & Co
Home and Farm	Louisville, Ky	B. F. Avery & Son
Argus	Atlanta Ill	Geo L Shoals
Journal of Agriculture & Farmer	St Louis, Mo	Chew & Harness
Western Stock Journal	Cedar Rapids Iowa	Stock Journal Co
Kentucky Live stock Record	Lexington, Ky	B J Bruce
Journal	Albion, Ill	Morris Emmerson
Pulaski Patriot	Mound City, Ill	E S Ackerman
The World	New York, N. Y.	The World Co
Factory and Farm.	Chicago, Ill	Fox, Cole & Co
Farmers' Review	" Ill.	Farmers' Review Co
Scientific Farmer	Boston	E L Sturtevant
Farmer City Reporter	Farmer City	A Smith
National Board of Trade	Chicago	National Board of Trade Co
United States Miller	Milwaukee, Wis	E H Cawker
Gazette	Mt Carroll, Ill	F H. McDowell
Democrat	Shelbyville Ill	E. Waggoner
Observer	Carbondale, Ill	A Ackerman
Journal	Freeport, Ill	A V. Richards
Daily State Journal	Springfield, Ill	Journal Co
Daily State Register	" "	Register Co
Daily Monitor	" "	T W S Kidd
Rural New Yorker	New York City	Elbert S Carman
Indiana Farmer	Indianapolis, Ind	Indiana Farmer Co
Wallace's Monthly.	New York City	John H. Wallace
Freeport Journal	Freeport, Ill	A V Richards
Farm and Fireside	Springfield, Ohio	P P Mast & Co
The Farmer and Fruit Grower.	Anna, Ill	H C Bouton
Weekly Drovers' Journal	Chicago	H L Goodall & Co
Cincinnati Price Current	Cincinnati, Ohio	Charles B Murray
American Stockman	Chicago, Ill	American Stockman Co

REPORT OF COMMITTEE ON TRANSPORTATION.

State Board of Agriculture:

Your committee on transportation would report that the following liberal concessions were granted by the roads named below for the State Fair and Fat Stock Show of 1878, and would recommend the adoption of the following resolution

Resolved, That the thanks of the Illinois State Board of Agriculture are due and tendered to the several railroads named below for their hearty co-operation in the work of making the State Fair and Fat Stock Show, of benefit to the greatest number of the industrial classes by liberal reduction of rates on passengers and freights to and from the Fair and Stock Show.

Resolved, That a copy of the resolution be sent to the roads named.

D P GILLHAM,
GEO S HASKELL,
EMORY COBB,
J. M WASHBURN,
S D. FISHER,
Committee.

RAILROAD ARRANGEMENTS, 1878.

STATE FAIR.

Chicago, Rock Island & Pacific Chicago, Burlington & Quincy Chicago & Alton Chicago, Pekin & Southwestern Chicago & Paducah Chicago & Iowa Toledo, Peoria & Warsaw *Wabash Illinois Midland Pekin, Lincoln & Decatur Western Union *Illinois Central Peoria, Pekin & Jacksonville Springfield & Northwestern St Louis & Cairo Short Line, St Louis, Alton & Terre Haute Indianapolis, Bloomington & Western, Indianapolis & St Louis & Leased Lines St Louis & Southeastern Railway	Passengers, one and one-fifth single fare for the round trip. Freight will be charged full rate to the Fair, and returned free to points whence shipped, on certificate of the Secretary that the same has been on exhibition, and has not changed ownership.
*Chicago & Northwestern	Passengers, one and one-fifth fare for the round trip Freight charges to be paid in advance, but if the property is returned to the place of shipment, without change of owner, the amount of charges will be refunded
Ohio & Mississippi ...	Passengers one and one-fifth fare for the round trip, on line of the road between Pana and Shawneetown, and Flora and Vincennes Freight (point on line not limited for freight) on animals and articles for exhibition customary rates from the place of shipment to the point at which the property leaves the road, and to be returned free to points whence shipped (ownership being unchanged), upon certificate of secretary that the same has been on exhibition.

As nearly all the railroads require prepayment of freight at the station whence shipped, a receipted bill should be taken for the same, which should be stamped or certified to by the Secretary on the ground, as early as Thursday of the Fair

*Arrangements only cover points in Illinois

CHICAGO FAT STOCK SHOW—1878

*Baltimore & Ohio Michigan Central **Lake Shore & Michigan Southern Pennsylvania Company Pittsburg, Cincinnati & St Louis	Will carry stock to Chicago at local rates and refund one-half of the amount paid on presentation of Secretary's certificate that the stock has been on exhibition
Chicago, Burlington & Quincy Chicago & Northwestern Chicago & Alton Chicago, Rock Island & Pacific Chicago & Eastern Illinois Illinois Central Chicago & Iowa Chicago & Paducah Chicago, Pekin & Southwestern	Will carry stock to Chicago at regular tariff rate and refund one-third of the amount paid on presentation of Secretary's certificate that the said stock has been on exhibition

Paid freight bills should be presented with the Secretary's certificate

These concessions are made upon condition that the roads are released from any and all liability exceeding $50 per head, in case of injury by accident or otherwise, while in transit, or while awaiting shipment or delivery at stations

*Arrangements apply to Chicago Division.

**Arrangements apply to stock shipped in car loads, or in lots of four animals or more; the revenue of the road in no case to be made less than $12 for 100 miles or less; $15 for distances between 100 and 200 miles, and $20 for distances between 200 and 300 miles.

REPORT OF COMMITTEE ON CROP STATISTICS.

State Board of Agriculture:

Your committee on crop statistics beg leave to report that there have been issued the past year reports as follows: for the months of May, June, July and August, 3,000 copies of each and the report for December is now nearly ready for distribution

These reports have been sought for from a wide section of the country by business houses, boards of trade, etc , and the increased edition has been none too large to meet the demand

The expense of publishing the reports the past year is as follows:

December, 1877	[illegible]	[illegible]
May, 1878	"	109 60
June, 1878	"	94 30
July, 1878	"	75 10
August, 1878	"	109 15
Blanks, for returns		55 00
Postage		104 20
Drainage statistics circular 43		101 25
Collecting drainage statistics		20 00
Total		$872 50

The crop correspondents reporting, number about the same as last year, with few changes, embracing every county in the state, and show increased care in their preparation and observations.

The meterological reports embrace the observations from about thirty counties in the state, and a summary for each month has been prepared for pulication with crop reports.

As this work has been gratuitously done by these reporters and observers, we would recommend the passage of the following res lution.

Resolved, That the thanks of the State Board of Agriculture are due and are hereby tendered to the crop and meterological reporters for their valuable and gratuitous service rendered the state during the past year

In accordance with the act of the General Assembly to secure agricultural and other statistics, approved May 25, 1876, blanks were prepared and sent out as provided

Tables of the assessors' returns have been prepared for publication in the report of the State Board of Agriculture

Although these returns are not so full or complete as desirable, they will be found very valuable and enable the Board to profit by the results, in preparing more complete arrangements for the collection of statistics, which must eventually become of incalculable value to every citizen of the state

In view of the great value of these crop and statistical reports, your committee would urge that all proper efforts be made to secure the continuance of appropriations adequate to the work, of the Legislature here now in session

Respectfully submitted.

D B GILLHAM,
S D FISHER,
H. D EMERY,
Committee

[For Crop Statistics see Appendix]

REPORT COMMITTEE FAT STOCK PREMIUM PLATE.

State Board of Agriculture.

Your committee, intrusted with the selection and purchase of genuine silver plate as prizes for the Fat Stock Show would report, that after considering the various offers presented, decided that the following proposition of C D. Peacock, of Chicago, was the most advantageous to the Board, and accepted the same, to-wit:

PROPOSITION OF MR. PEACOCK

1 I will give you the most artistic and best workmanship that we can produce
2. I will give you the most liberal weight of silver that the amount you have set apart for the prizes will procure.
3 I will furnish all the above prizes at their actual first cost to me, hoping to derive the benefit in the advertising it will give my house.

[Signed] C D PEACOCK.

The rule adopted giving plate for all sweepstakes and grand sweepstakes prizes of the full value of said premiums, required plate to the value of $1,165, which was executed in the most artistic and appropriate manner.

Respectfully submitted.

D. B. GILLHAM,
JNO. P. REYNOLDS,
LEWIS ELLSWORTH,
Committee

State Board of Agriculture:

Your committee, appointed to prepare specifications of requirements necessary to accommodate exhibitors and the Board for the Fairs of 1879 and 1880, would recommend the following:

ILLINOIS STATE FAIR

SPECIFICATIONS OF THE REQUIREMENTS MADE BY THE ILLINOIS STATE BOARD OF AGRICULTURE, OF LOCALITIES BIDDING FOR THE STATE FAIRS OF 1879 AND 1880:

1. There shall be furnished not less than forty (40) acres of suitable ground, enclosed with a substantial fence, not less than seven (7) feet high, and two (2) gates for foot passengers and two (2) gates for vehicles at convenient points.

2 Twenty-five hundred (2,500) linear feet of stalls for cattle; size six (6) feet in width, by eight (7) feet long, with twelve (12) foot roof, partitions four (4) feet high, and to be tight, eighteen (18) inches high from the ground, balance of partition to be open fence

3 Twenty-five hundred (2,500) linear feet of stalls for horses, substantially built, with tight partitions, eight (8) feet high, well roofed, and to be six (6) feet in width by twelve (12) feet long; said cattle and horse stalls to be furnished with suitable feed trough, manger and fixtures for tying stock

4 Every tenth cattle and horse stall shall be closed with a door at the end, properly hung, and provided with hasp and staple Stalls thus finished need not be provided with troughs and mangers All to be whitewashed on the face surface, and numbered with figures at least six (6) inches in length

5. Four hundred (400) pens for hogs, six (6) by eight (8) feet each, to be substantially built, properly floored and tightly roofed, not less than six (6) feet from the ground at the eaves, and nine (9) feet high in front; each pen to be provided with feed trough, and a door with suitable fastenings All to be numbered with figures not less than four (4) inches in length.

6 Three hundred (300) pens for sheep, six by eight (6x8) feet, tightly roofed and provided with feed trough and rack; also a door with suitable fastenings All to be numbered with figures not less than (4) four inches in length Pens to be six (6) feet at the eaves and nine (9) feet in front

7. Two Exhibition halls to be built in the shape of a Greek cross, and each covering a space of not less than nine thousand six hundred (9 600) superficial feet, to be floored, tightly roofed and properly lighted by glazed windows, with suitable flag-staff on each

8 Two hundred and twenty (220) linear feet of 2¾ inch shafting, to be placed on suitable frame, without cover, and to run 130 revolutions per minute. Steam power of not less than fifty (50) horse power, with engineer to run the same during the fairs, to operate the machinery on exhibition

9 A poultry shed, not less than forty by one hundred (40x100) feet, ten (10) feet high at the sides, to be provided with tables, and coops made of lath, or other light material, as follows: A double row of coops on each side and a double row through the center The coops on one side to be—outside row, three and one-half by three (3½x3) feet; inside row twenty-eight by twenty inches (28x20), the center two rows to be twenty-eight by twenty (28x20) inches each on the other side—outside row twenty-eight by twenty-four (28x24) inches, and the inside row twenty by fifteen (20x15) inches, two stories high

10 A floored building, for general headquarters, thirty by thirty (30x30) feet, two stories high, provided by flag-staff, with four one story wings or shed rooms, sixteen by thirty (16x30) feet, making the building in the shape of a Greek cross—one wing sixteen by thirty (16x30) feet, to be partitioned off from the inner court for the offices of President and Secretary; the other wings sixteen by thirty (16x33) feet, to be partitioned off the court for the office of the General Superintendent; one end, sixteen by thirty (16x30), to be partitioned off from the court for the Auditing committee, the other end, sixteen by thirty (16x30) feet, to be partitioned off from the court for clerks of the Secretary; the several offices to be provided with the necessary tables and chairs, the partitions dividing the offices and open courts, to be not less than seven (7) feet high, with doors opening from each office to the court

The several offices to be designated by suitable signs, and to be properly lighted with four windows to each wing—windows to have double sash-lights ten by sixteen (10x16) inches, 6 lights in each sash.

11. A Treasurer's office twelve by thirty (12x30) feet, floored, with six sliding windows and shelves suitable for selling tickets, the door to be provided with lock and key

12. A Business Office for superintendents of sheep and swine, sixteen by thirty-two (16x32) feet, floored and tightly roofed and glazed, with partition in the center, and lettered as above.

13 A suitable Hall for the accommodation of the Press and Committeemen, not less than sixteen by thirty-two (16x32) feet, with partition in center, floored and glazed, and provided with table and chairs

14 A carriage shed thirty by eighty (30x80) feet, and nine (9) feet high at the sides

15 Ladies' drawing room, not less than twenty by thirty (20x30) feet, furnished with chairs, tables and accommodations for washing, a water-closet five by twenty-four (5x24) feet, with yard not less than thirty (30) feet square adjoining, inclosed with a tight board fence not less than seven (7) feet high

16 Amphitheatre adjoining the track and show ring, to be well roofed, and so arranged as to comfortably seat five thousand (5,000) persons at one time Said amphitheatre to be finished with booths underneath of sufficient size for the transaction of business

17. Judges' stand, two stories high to be furnished with flagstaff, flag and fixtures.

18. Granary, twelve by sixteen (12x16) feet.

19 Five privies, five by sixteen (5x16) feet, each with suitable yard in front, with fence seven (7) feet high, with gateway five [5] feet wide, with a blind not less than seven [7] feet high by fourteen [14] long.

20 A driving track, to be properly graded, and kept in order during the Fairs, fifty feet wide, and not to exceed one-half mile in circuit, and not less than one-fourth of a mile in circuit on the inside line, enclosed with a substantial railing Also a show ring around the Judges' stand, four hundred [400] feet in diameter, properly graded and guarded by railing

21. An abundant supply of good water, suitable for persons and stock, at ten [10] convenient points on the grounds

22. Sixty [60] tons of straw, or as much thereof as may be required for bedding stock on exhibition and other purposes, to be distributed under the direction of the superintendent of forage and stalls

23, Suitable facilities, [that is to say, steam railway communication between the Fair Grounds and regular railway lines reaching the city of ——,] ample for the accommodation of exhibitors and visitors, and for the transportation of stock and articles for exhibition, which is to be afforded at reasonable and customary rates

24 A written guaranty from the hotels and principal boarding houses that they will not charge for the accommodation of visitors and exhibitors more than their customary rates.

25. In determining the location of the Fair, the facilities extended by the railroads will be considered, which must be in writing, over the signature of the proper officers of the several railroads, giving the rates that will be charged for the transportation of passengers and freight to and from the Fair.

26. Suitable drainage of the grounds

27. Additional space, outside the enclosure, for camping grounds, with a sufficient water supply, if in the opinion of the committee of Arrangements the same may be necessary for the accommodation of the public, will also be considered in deciding the location

28 All the foregoing specifications and requirements to be complied with, all structures to be completed, freshly whitewashed and ready for occupancy by or before the first day of September next; and possession of the grounds, thoroughly cleaned, and fixtures, to be delivered to the Committee of Arrangements at the time stated, free of any cost or expense whatever, to the State Board of Agriculture—and with the express understanding that in the event of loss or damage to any of the buildings or fixtures hereinbefore required, from any cause whatever, between the time of holding the Fair of 1879 and that of 1880, the same shall be made good, and the grounds and track put in complete order before the opening of the Fair of 1880, without trouble or expense to the State Board of Agriculture

29 A good and sufficient bond of not less than ten thousand dollars [$10,000] duly executed, that all the foregoing specifications and requirements will be complied with

30 The point securing the location of the Fair for 1879 and 1880 having buildings on their grounds suitable for any of the above requirements, will be received, if in the opinion of the Committee of Arrangements, they can be used

Proposals, in due form, will be considered by the Board, at Springfield, on the 2d Tuesday in January, 1879

Respectfully submitted.

D. B GILLHAM,
J R SCOTT,
S D FISHER

REPORT OF COMMITTEE ON SCIENTISTS.

State Board of Agriculture:

Your committee for the selection of consulting Scientists to this Board, beg leave to report and recommend the appointment of the following named gentlemen for the respective departments;

Entomologist	Prof Cyrus Thomas	Carbondale
Veterinarian	Dr N H Pearen	Chicago
Chemist	Prof H A Weber	Champaign
Geologist	Prof A H Worthen	Warsaw
Botanist	Prof. T J Burrell	Champaign

Respectfully submitted

D B. GILLHAM,
S. D FISHER,
H. D EMERY,
Committee

On motion of Mr. Cobb,
The Board adjourned to 3 o'clock p. m.

AFTERNOON SESSION

Board met pursuant to adjournment.

Present: President Gillham, Vice-Presidents Ellsworth, Emery, Perlam, Haskell, Moore, Dysart, Snoad, Vittum, Douglas, Beaty, Bishop, Pullen, Stookey, Washburn and Landrigan.

Mr. Beaty introduced the following resolution, which was adopted:

Resolved That the miscellaneous awards at the 1878 State Fair be referred to the superintendents of sections 1 and 2 of class F, and the superintendent of class K, for consideration and report.

Mr. Dysart introduced the following resolution, which was adopted:

Resolved, That 2 o'clock p. m., Wednesday, be appointed as the special hour for receiving reports of superintendents of departments relating to the last Fair.

The finance committee made the following report and,

On motion of Mr. Ellsworth,

The report was received and adopted.

State Board of Agriculture:

Your committee would recommend that after the approval of bills against this Board as is now provided all claims (excepting premiums) shall be presented to the Secretary for filing and future reference

The Secretary will draw a warrant (to be countersigned by the President) on the Treasurer for the amount due, specifying in each warrant the fund to which the same shall be charged

EMORY COBB,
D. E. BEATY,
E. H. BISHOP,
M. E. STOOKEY,
W. M. SMITH,
Finance Committee

Motion of Mr. Haskell, carried—

That the report of the Secretary be referred to a committee of three, to be appointed by the President.

President appointed as said committee Messrs. Haskell, Bishop and Emery.

President Gillham, chairman of the committee of arrangements, made the following report, when,

On motion of Mr. Ellsworth,

The action of the President in providing the necessary accommodations, as specified in the special report, was approved by the Board.

REPORT OF PRESIDENT GILLHAM.

State Board of Agriculture:

As chairman of the committee of arrangements I desire to make the following statement:

As is well known to all concerned the arrangements for holding the State Fair at Freeport, for 1877, was largely inside of the specifications and were received by the State Board under protest and with the understanding, explicitly stated by the local board, that they should be enlarged for the fair of 1878 When the committee of arrangements went to Freeport and inspected the grounds and determined what should be done in the way of enlarging the buildings and locating the additional halls, pens, stalls, to best accommodate exhibitors, the local committee while not agreeing to do all that was desireable, did promise to do most of the work demanded by your committee

They did only not do that, but refused to furnish the egress grounds that your committee demanded, before accepting the grounds for holding a fair at Freeport, consequently I had to make the arrangement with the owner of the ground, Mr Lechenberger, on behalf of the Board, at a cost of $75 00; with J. B Taylor for constructing stalls and repairs, at a cost of $157 24; paid S M Mun & Co, for lumber, $231 ·4; paid Messrs. Sanford & Ravell for littering, $5 64; making a total expense to the Board of $469 22

Under the specification of requirements, the local board agreed to furnish the above and as they did not, they ought to pay the cost of the same into the treasury of the Board

Respectfully submitted,

D. B. GILLHAM,
Chairman Committee of Arrangements

Motion of Mr. Ellsworth, carried—

That the Treasurer of this Board make demand on the bond of the Freeport authorities for the amount specified by the committee of arrangements in their report, and paid by the State Board of Agriculture, for accommodations called for in the specification of requirements and covered by the bond and not furnished by the citizens of Freeport, as agreed upon.

On motion of Mr. Snoad,

The Board adjourned to 9 o'clock a. m., to-morrow.

WEDNESDAY, January 8, 1879, 9 o'clock A. M.

Board met pursuant to adjournment.

Present: President Gillham, Vice-Presidents Ellsworth, Emery, Periam, Haskell, Moore, Dysart, Snoad, Cobb, Vittum, Douglas, Beaty, Judy, Smith, Scott, Bishop, Pullen, Stookey, Washburn and Landrigan.

Minutes of yesterdays meetings read and approved.

The claim of W. T. Sanger, of Belvidere, Ill., and Mrs Mary Maxwell, of Reynoldsburg, Ohio, for damage sustained at the late State Fair by reason of the storm, were,

On motion of Mr. Periam,

Referred to a committee of three, to be appointed by the President.

President appointed as said committee, Messrs. Periam, Haskell and Pullen

E. H. Smith, of Dubuque, Iowa, presented a claim for premium of diploma and $30 00, for best display of vegetables by county, union or district agricultural board, exhibited by him as agent of the Northwestern Agricultural and Mechanical Association, of Dubuque, Iowa.

Mr. Periam, superintendent Class G, stated that the intention of the Board in offering the premium to county, union or district agricultural boards, was to confine the competition to agricultural boards in the State of Illinois, and organized pursuant to law, that the claimant was not therefore entitled to the premium.

On motion of Mr Periam,

The claim was not allowed

Mr. Beaty, chairman committee on miscellaneous awards, made the following report, which,

On motion of Mr. Cobb,

The report was received, and the committee discharged.

REPORT COMMITTEE ON MISCELLANEOUS AWARDS.

State Board of Agriculture.

The committee, to whom was referred the recommendations of awarding committees in the miscellaneous classes, would recommend that the suggestions of the committees, as noted in the following report, be approved and that diplomas be awarded to all articles marked "highest commendation"

Respectfully submitted,

D E BEATY,
E H BISHOP,
JONATHAN PERIAM,
W. M SMITH,
Committee.

AWARDS ON MISCELLANEOUS ENTRIES.

CLASS F—Section 1.

D. E. BEATY, *Superintendent*

LOT 77.

Combination Chair:
F. D. Hurst, Freeport..... ..... Diploma.

LOT 78.

Waterloo Yeast:
Waterloo Yeast Co , Waterloo, N Y ..... Commended.
Hog-ringing Machine:
Brown & Howey ..... Highly commended.
Display Leather and Collars:
Hess & Hopkins, Rockford..... Highly commended.
Milk Cans:
Gary & Holt, Turner Junction..... Commended
Arctic Milk Cooler:
H. A Hazzard, Winnebago ..... Commended
Baby Wagon and Jumper:
M. P Gillen, Forreston ..... Highly commended
Cooley Patent Creamer:
C. & J. M Bickfar, Rockford ..... Highly commended

Section 2.

W M. SMITH, *Superintendent*

LOT 80

Automatic Tank Cover:
A M Teller, Morrison ..... Commended.
Samples Brick:
Adrian Brick and Tile Machine Co ..... Diploma
Fire Extinguisher:
J W Sanborn, New York City..... Commended
Road Scraper:
E D Dague, Decatur ..... Highly commended
Stock Gallows:
W G Hyder, Plainwell, Mich..... Commended
Sample Baled Hay:
P K. Dedrick & Co., Albany, N. Y ..... Diploma

CLASS G.

JONATHAN PERIAM, *Superintendent*

LOT 84

Squash Vine and Pampas.
T. A. Imlay, Ridott ..... Commended.

LOT 85.

Dairy Salt, "Eureka":
George Rustin, Freeport..... Commended

CLASS K.

E. H. BISHOP, *Superintendent.*

LOT 103.

Infant's Robe:
Mrs. A. B. Savage, Forreston.....Highly commended.

LOT 104.

Black Guipure Lace Barb:
Mrs. Mary Wright, Freeport.....Highly commended.
Point Lace:
Mrs. F. L. Achenbach, Freeport.....Highly commended.

LOT 105

Button String:
Lillie Deffenbaugh, Freeport.....Highly commended.

Mr. Haskell, chairman committee on Secretary's report, submitted the following report.

On motion of Mr. Landrigan,

The report was amended, by non-concurrence in the recommendation of the committee, to appropriate funds from the treasury of the Board to cover the expense of publishing agricultural statistics collected by assessors, in May, 1878.

Motion Mr. Scott, carried,

That the report of the committee, as amended, be adopted.

REPORT OF COMMITTEE ON SECRETARY'S REPORT.

State Board of Agriculture;

Your committee, to whom was referred the report of the Secretary, beg leave to report as follows:

DRAINAGE

In view of the new departure, the result of the adoption of the constitutional amendment regarding drainage, and the greatest necessity for careful legislation to protect the rights of all concerned, we would recommend the appointment of a committee of three members of this Board (the President being chairman) to consult with the committees of the General Assembly on agriculture and drainage in the preparation of necessary laws on the subject

DAIRYING.

Considering the rapid growth of the dairy interest of the State, and the great amount of capital invested in the business, we would recommend increased encouragement in this direction in the way of premiums for dairy products, especially for those intended for export, with a view of increasing the quality of the products.

ASSESSORS' RETURNS OF AGRICULTURAL STATISTICS.

From the facts set forth in the report regarding the publication of these returns that they lose much of their value by delay, we would recommend the publication by this Board, of these reports in pamphlet form, as soon as practicable after collection, and that an appropriation of not to exceed two hundred dollars, or so much thereof as is necessary, be made for this purpose

CLERICAL FORCE, SECRETARY'S OFFICE.

By former resolution of the Board, we understand the President is fully authorized to employ any additional clerical force the work of the office requires.

ENTRIES AND AWARDS AT THE STATE FAIR

In order to secure the early publication of the awards of this Board at its annual Fairs, and to place on record the names of the exhibitors, who help make our annual shows a success, we would recommend the publication, by the Board, as soon as practicable after the Fair, a bulletin, in which shall be published the list of entries and awards in the various departments

DISTRIBUTION OF SEEDS

From the fact that our agriculture can be greatly benefited by the exchange with other States and nations, of the non-perishable products of the farm, and from the fact that this Board is often solicited to make such exchange, and from the difficulty of procuring such products by donations, we would recommend that the President and Secretary be constituted a committee to select and purchase, at their discretion, such seeds and grains as are desirable for the purpose, and that an appropriation of two hundred dollars, or such portion as may be necessary, be made by this Board

Respectfully submitted,

GEO S. HASKELL, H D EMERY, E H. BISHOP } Committee.

On motion of Mr. Moore,

The secretary was instructed to draw an order on the treasurer for $50, in favor of Messrs. Pickrell & Kissenger, for premium withheld on the informal protest entered by Messrs. Strawn, Jackson & Co., of Ottawa, at the last State Fair.

Motion Mr. Scott, carried—

That the vote fixing 2 o'clock p. m., as the special hour for receiving the reports of superintendents of departments concerning the Fair, be reconsidered.

Motion Mr. Cobb, carried—

That the reports of superintendents of departments be now considered.

The following reports were received, adopted, and ordered spread upon the journal·

CLASS A—CATTLE

REPORT OF SAMUEL DYSART, *Superintendent.*

State Board of Agriculture:

The extent and quality of the exhibit of the various breeds of beef and dairy cattle was in keeping with the long established reputation of the Illinois State Fair as the leading fine stock exposition of the country

The prominence attained by Illinois breeders and the success that attends their efforts in the show ring, when their herds and pens are brought into competition with stock from other sections at the leading fairs in other states, is matter of history, and no higher compliment could be paid the cattle exhibit of the last State Fair than the assertion of the fact that some of the best herds of cattle in the State were most creditably represented.

Some very superior herds from adjoining states were on exhibition and received premiums which are noted elsewhere in the list of awards

The entries of the several breeds of cattle in point of number are as follows

Shorthorns	111
Jerseys	63
Holsteins	57
Ayrshire	53
Hereford	47
Devon	33

The arduous duties of the awarding committees were performed to the satisfaction of exhibiters and the public in all the rings, except where the several breeds were brought to competition.

Hereford Bull SEVENTY-SIX —Awarded Sweepstakes Premium, Ill State Fair 1878, Exhibited by T. L Miller, Beecher, Ill

The apparent difficulty in sweepstakes rings, open to all breeds, of procuring committees, who by education, experience in handling pecuniary interest or preference had not become more or less prejudiced in favor of a particular breed, was not overcome to the satisfaction of all the exhibiters.

Some suggestions will be made when the classification of premiums for the next Fair is under consideration, with a view of ensuring a greater degree of satisfaction among exhibiters in this department.

Lot	Breed, etc	Four yrs or over	Three and under 4 yrs	Two and under 3 yrs	One and under 2 yrs	Under 1 yr	Six mos. and under	Under six months	Total entries	Am'nt of premiums offered	Am'nt of premiums paid
1	Shorthorn bulls	8	4	2	3	15	3	35	35	$200	$200
2	" cows and heifers	9	7	5	13	12	4	50	50	200	200
3	" sweepstakes bulls								14	25	25
3	" " females								12	25	25
	Total	17	11	7	16	27	3	111	111	450	450
4	Hereford bulls	2		1	6	4	1	14	14	200	135
5	" cows and heifers	7	2	3	5	3	2	22	22	200	200
6	" sweepstakes bulls								5	25	25
6	" " females								6	25	25
	Total	9	2	4	11	7	3	47	47	450	385
7	Holstein bulls	1	2	2	2	3	6	16	16	200	185
8	" cows and heifers	6	4	4	4	1	2	21	21	200	190
9	" sweepstakes bulls								9	25	25
9	" " cows & heifers								11	25	25
	Total	7	6	6	6	4	8	57	57	450	425
10	Devon bulls	1	1	1	1	2	4	10	10	200	145
10	" cows and heifers	5	3	3	2	0	1	14	14	200	165
11	" sweepstakes bulls								4	25	25
11	" " females								5	25	25
	Total	6	4	4	3	2	5	33	33	450	360
12	Ayrshire bulls	4	3	2	3	2	3	17	17	200	200
12	" cows and heifers	4	3	4	5	1	4	21	21	200	190
13	" sweepstakes bulls								8	25	25
13	" " females								7	25	25
	Total	8	6	6	8	3	7	53	53	450	440
14	Jersey bulls	3	2	1	3	4	2	15	15	200	175
14	" cows and heifers	9	5	5	5	3	7	34	34	200	200
15	" sweepstakes bulls								4	25	25
15	" " females								10	25	25
	Total	12	7	6	8	7	9	63	63	450	425
16	Herds open to all breeds, aged								9	150	150
	" " " " young								7	75	75
17	Herds from one bull, open to all								6	150	150
18	Breeders ring, open to all								4	150	150
19	Sweepstakes, open to all								42	300	300
	Total								432	$3525	$3310

Respectfully submitted,

SAMUEL DYSART,
Superintendent Class A

CLASS B—HORSES.

REPORT OF JOHN LANDRIGAN, *Superintendent.*

To the State Board of Agriculture:

The horse department was well represented at the late Fair, in all the rings provided for in the premium list, and in point of number and entries, exceeded that of past two years.

The quality and breeding of the horses on exhibition was fully up to the high standard of any former Fair.

The number of entries, and other details concerning the show of horses, are given below

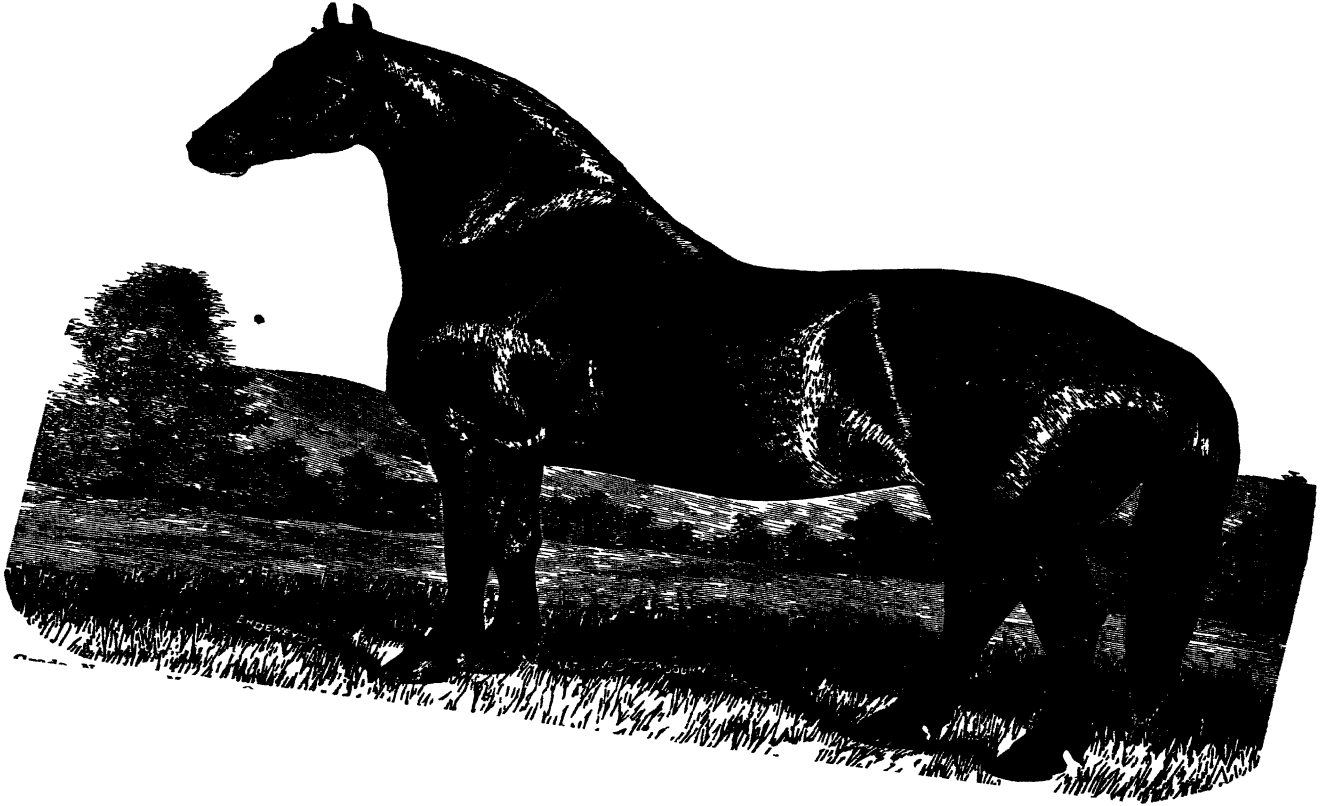
The great value of a large exhibition of the best specimens of horses, the comparative merits of the competing animals, and the reasons influencing awards, are only realized by such who are fortunate enough to be present; while the general public are deprived of much important information, for want of a much-needed provision for publishing all facts in connection with the exhibition governing awards

I would recommend, that in future, the awarding committees make a detailed statement; describing the several rings, and giving the reasons for making awards, to the end that the information may be published in the annual reports of the Board

There are but few changes that have been recommended by exhibiters, and they will be brought to the attention of the Board when the premium list for the next Fair is considered.

Entries-premiums offered and paid at the last Fair are as follows:

Lot	Breed, etc	Four yrs or over	3 and under 4 yrs	2 and under 3 yrs	1 and under 2 yrs	Under 1 year	Brood mares	Total entries	Amount premiums offered	Amount premiums paid
	Thoroughbreds—									
20	Stallions	3	.	2	2	. .	.	7	$150	$80
	Mares	2	.	1	1	1	1	6	180	140
21	Sweepstakes stallions	...	. .	.	...	.	. . .	6	50	50
	" mares	..		. .	.	..	. .	3	50	50
	Total	5	..	3	3	1	1	22	430	320
	Roadster—									
22	Stallions	7	8	2	1	7	...	25	150	130
	Mares	6	6	6	3	6	2	29	180	180
23	Sweepstakes stallion	...	...	.	.	.	.	8	100	100
	" mares	..			..	...	...	8	50	50
	Total	13	14	8	4	13	2	70	480	460
	Horses for all work—									
24	Stallion	13	6	3	4	7	. . .	33	150	150
	Mares	19	8	8	6	8	1	45	180	180
25	Sweepstakes stallions	.....	.....	. ..	.. ..	.. .	.....	20	50	50
	" mares	.. ..	. ..	. .		..	....	23	50	50
	Total	32	9	11	19	15	1	121	430	430
	Draft horses imp or full blood—									
26	Stallion	11	. .	2	2	. .	... .	15	150	95
	Mares	2	1	2	.....	..	..	5	180	90
27	Sweepstakes stallions	.	....	...	.	. .	....	13	50	50
	" mares	. .	.. ..	....	. .	..	. ...	5	50	50
	Total	13	1	4	2	.....	....	38	430	285
28	Draft hor, other than imp. or F. B.									
	Stallions	10	8	4	1	2	.....	25	150	140
	Mares	11	7	3	4	4	1	30	180	180
29	Sweepstakes stallions	. .	.		...	.....	....	19	50	50
	" mares	....	.. .	..	...	....	.. .	14	50	50
	Total	21	15	7	5	6	1	88	430	420
30	Draft team	.....	.....	.....	.....	. ....	.....	6	60	60



CLASS B—HORSES—Continued

Lot	Breed, etc	4 yrs. or over	3 and under 4 yrs.	2 and under 3 yrs	1 and under 2 yrs	Under 1 year	Brood mares.	Total entries	Amount premiums offered	Amount premiums paid
	Horses for agricultural purposes—									
31	Stallion	6	11	5	5	5	....	32	150	150
	Mares	13	7	5	8	7	10	50	180	180
32	Sweepstakes stallions	....	....	....	....	....	....	20	50	50
	" mares	....	....	....	....	....	....	16	50	50
	Total	19	18	10	13	12	10	118	430	430
	Breeders' ring—									
33	Five horses, any breed, owned and bred by exhibitor	....	....	....	....	....	....	14	150	150
	Breeders' ring sweepstakes—									
34	Stallion and five colts	....	....	....	....		....	5	100	100
	Mare and two colts	....	....	....	....	....	....	6	50	50
35	Saddle stallion, four yrs	2	....	....	....	....	....	2	60	40
	Saddle mare	4	2	....	....	....	....	6	60	40
	Saddle gelding	6	1	....	....	....	....	7	60	50
	Total	12	3	....	....	....	....	....	....	....
36	Carriage horses	....	....	....	....	....	....	32	90	90
37	Gentlemens' driving horses	....	....	....		....	....	41	270	270
38	Jacks	4	....	1	1	2	....	8	155	90
	Jennets	....	3	1	1	....	....	5	90	70
	Mules	....	6	6	8	4	....	24	90	90
39	Jacks, sweepstakes	....	....	....	....	....	....	2	50	50
	Jennets, "	....		....	....	....	....	1	25	25
	Total	4	9	8	10	6	....	40	410	325
	Grand total	....	....	....	....	....	....	616	3,940	3,450

Respectfully submitted.

JOHN LANDRIGAN,
Superintendent Class B, Horses

CLASS C—SHEEP.

REPORT OF D. W. VITTUM, JR., *Superintendent.*

To the State Board of Agriculture:

The display of sheep at the last Fair in point of numbers was not up to that of the two previous years, but the quality of the stock was equal if not superior to that heretofore shown

The want of suitable and ample accomodations for sheep at the previous Fair doubtless had much to do with the reduction of the number of entries in this department at the late Fair.

In the classes for long, middle and fine wool sheep, the animals exhibited were fine specimens and evinced much skill on the part of the breeder, and no stronger proof is necessary to convince an observer that the spirit of improvement among sheep breeders is as progressive and earnest as that manifested by breeders of all other kinds of live stock.

The exhibit represented the more prominent breeders of Canada, Kentucky, Vermont Michigan and other States, and was creditable to all concerned

The awards gave very general satisfaction and exhibitors and the public appeared well pleased with the decisions of committees.

The following table shows the entries, offerings and awards to this class:

Lot	Breed	Three yrs. and over.	2 and under 3 yrs.	1 and under 2 yrs	Under 1 year	Total entries	Amount premiums offered	Amount premiums paid
40	Long wools rams	4	4	14	10	32	$90	$90
	" " ewes	3	3	5	2	13	90	80
41	" " sweepstakes rams	...	...			10	15	15
	" " " ewes	..	....	..		12	15	15
	" " " ram and ewe	...	.	.	..	3	25	25
	Total	7	7	19	12	70	235	225
42	Middle wools rams	3	3	3	5	14	90	90
	" " ewes	3	5	5	2	15	90	90
43	" " sweepstakes rams	.		.	.	6	15	15
	" " " ewes	. .	.	.	.	7	15	15
	" " " ram and 5 ewes	.	.		.	4	25	25
	Total	6	8	8	7	46	235	235
44	Fine wools, rams	5	6	11	4	26	90	90
	" " ewes	7	9	6	7	29	90	90
45	" " sweepstakes rams		..			12	15	15
	" " " ewes					16	15	15
	" " " ram and 5 ewes	...				5	25	25
	Total	12	15	17	11	88	235	235
46	Breeders ring, 10 head sheep		..			9	40	40
47	Fat sheep		.	..		11	30	30
	Total	.	...	.		224	$775	$765

Respectfully submitted,

D W VITTUM, JR.,
Superintendent Class C, Sheep

CLASS D.—SWINE.

REPORT OF M. T. STOOKEY, *Superintendent.*

To the State Board of Agriculture:

The increase in the number of entries of swine the past few years has been so great as to make it a difficult matter to provide the necessary pens required by exhibitors

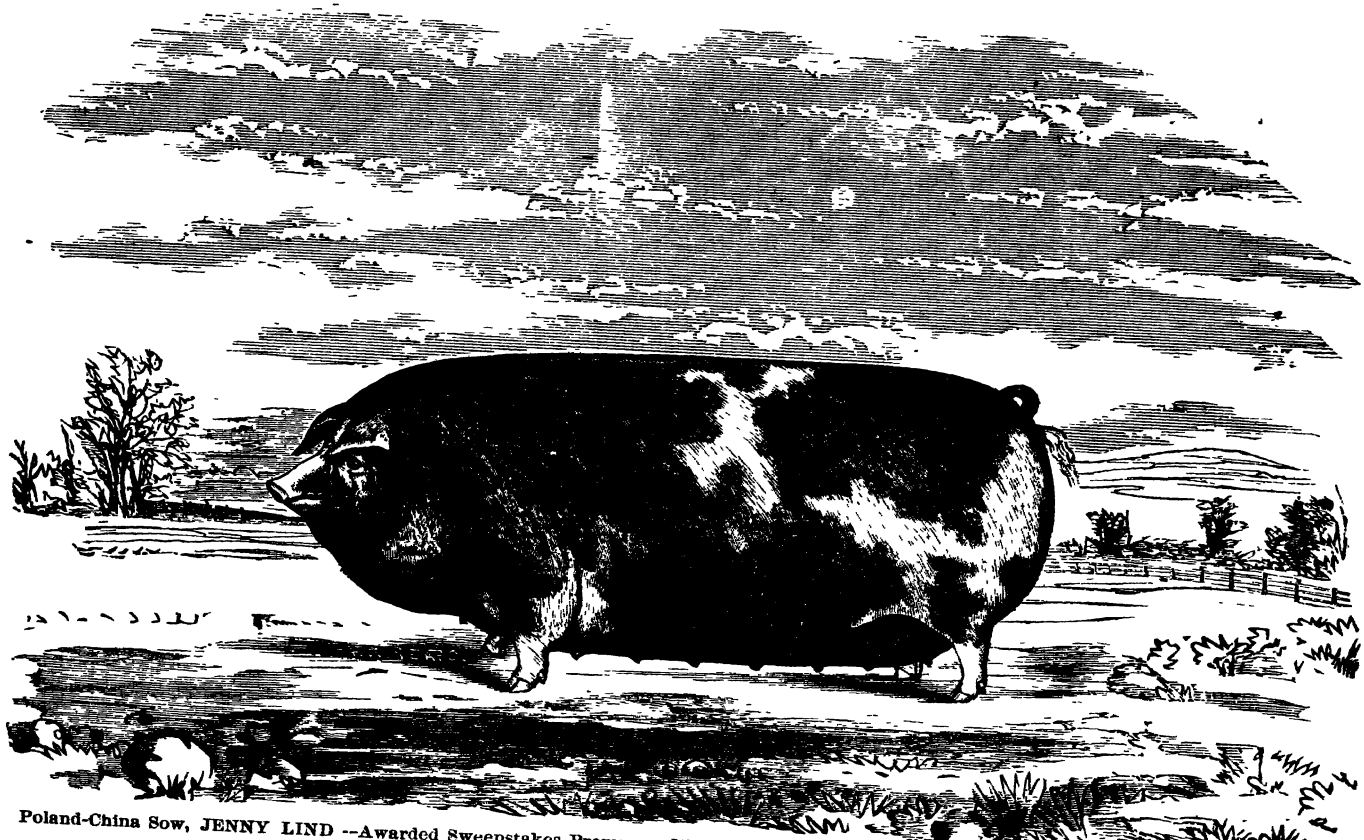
The number of entries at the recent Fair is somewhat less than the average for the past four years, as will be seen by the following table.

The limited accommodations for swine has had the effect to reduce the number of young pigs, brought to the Fair for the sole purpose of sale, and the animals entered at the last Fair made a more creditable exhibition

The improvement in quality of stock exhibited each year is noticeable, and the near approach to the high standard of perfection in form, size, quality, etc., by the majority of swine exhibitors at our Fairs, leaves but little room for any desirable change.

The committees were most thorough in their examinations, and the awards gave very general satisfaction, and with scarcely an exception, all concerned appeared well pleased

There are several important changes that will be suggested at time of making up the premium list.



Poland-China Sow, JENNY LIND --Awarded Sweepstakes Premium—Illinois State Fair, 1878. Exhibited by H. C. CASTLE, Wilmington, Ill

The entries and premiums offered and paid, are as follows:

Lot	Breed	Two years and over.	One and under two years	Six months and under one year.	Under six months	Sow and pigs	Total entries	Premiums offered	Premiums paid
48	Berkshire, boars	5	7	8	17	.....	37	$100	$100
	" sows	8	11	7	14	2	42	130	120
49	" sweepstakes, boars	....	.....	.....	.....	.....	16	20	20
	" " sows	.....	.....	.....	.....	.....	19	20	20
	Total	13	18	15	31	2	114	270	260
50	Chester, white, boars	7	7	13	10	.....	37	100	100
	" " sows	10	12	7	12	4	45	130	130
51	" " sweepstakes, boars	.....	.....	.....	.....	.....	16	20	20
	" " " sows	....	.....	.....	.....	.....	15	20	20
	Total	17	19	20	22	4	113	270	270
52	Poland china, boars	7	8	11	83	.....	109	100	100
	" " sows	12	17	18	62	2	111	130	130
53	" " sweepstakes, boars	.....	....	.....	.....	.....	49	20	20
	" sows	.....	.....	.....	.....	.....	20	20	20
	Total	19	25	29	145	2	289	270	270
54	Suffolk, small Yorkshire, short-faced Lancashire, boars	6	7	7	10	.....	30	100	100
	Suffolk, small Yorkshire, short-faced Lancashire sows	8	11	11	15	4	49	130	130
55	Suffolk, small Yorkshire, short-faced sweepstakes, boars	.....	.....	.....	.....	.....	15	20	20
	Suffolk, small Yorkshire, short-faced sweepstakes, sows	.....	.....	.....	.....	.....	16	20	20
	Total	14	18	18	25	4	110	270	270
56	Essex boars	3	4	4	10	.....	21	100	100
	" sows	4	3	5	7	2	21	130	130
57	" sweepstakes, boars	.....	.....	.....	.....	.....	8	20	20
	" " sows	.....	.....	.....	.....	.....	8	20	20
	Total	7	7	9	17	2	58	270	270
58	Breeders' ring	.....	.....	.....	.....	.....	26	70	70
	Total	.....	.....	.....	.....	.....	596	$1420	$1420

Respectfully submitted,

M. T. STOOKEY,
Superintendent Class D, Swine.

CLASS E—POULTRY.

REPORT OF H. D. EMERY, *Superintendent.*

To the State Board of Agriculture:

In accordance with the premium list, the display of poultry was made by single birds, and fully occupied all the space provided

It seems quite impossible to secure any uniformity of exhibition coops by exhibiters, and much of the symmetry of the show is lost, from the various sizes and styles of coops used; and I would again urge that this Board require the fitting up of the building with coops of uniform style

Considering that the time of year when our show is held is unfavorable for the best condition of either young or old fowls, for exhibition, the display was one of rare merit for individual excellence of the specimens shown, and formed a very attractive part of the exhibition

The following table gives the number of entries in the department, the amount of premiums offered and paid:

Lot	Breed, etc.	Number of entries.	Premiums offered.	Premiums paid.
59	Asiatic	135	70	60
60	Dorking, Dominique and Plymouth Rock	52	50	36
61	Spanish	39	50	40
62	Hamburgs	36	60	47
63	Polish	33	50	37
64	French	9	30	12
65	Game	68	120	91
66	Bantams	71	90	58
67	Miscellaneous	4	33	11
68	Guineas	.....	16	.....
99	Turkies	7	54	18
70	Ducks	25	45	35
71	Geese	10	30	24
72	Pigeons	38	36	32
73	Rabbits	10	35	21
74	Display	2	15	15
	Totals	539	784	537

Respectfully submitted,

H. D EMERY, Superintendent

CLASS F—MECHANIC ARTS—Section 1.

Report of D. E. Beaty, *Superintendent.*

To the State Board of Agriculture:

As Superintendent of Section 1, Class F, I would report that the exhibition in this department was good and everything passed off pleasantly to both exhibitors and visitors

The experience of this department fully demonstrates the importance of demanding the amount of space required in our specifications.

The three previous exhibitions in this section were so cramped for want of room, as to make it unpleasant for exhibitors, and very unsatisfactory to visitors

The extent of the exhibit may be seen in the following table:

Lot	Articles	Entries	Silver medal		Diploma		Cash premium.	
			Offered	Awarded	Offered	Awarded	Offered.	Awarded
75	Light machines	4	20	3	1	.....	30	.....
76	Stoves, castings	18	24	5	3	2	30	20
77	Househ'd furnit're, various kinds	23	15	5	.....	.....	.....	.....
78	Manufactures	20	48	4	2	2	15	15
79	Sewing machines	9	.....	.....	.....	.....	.....	.....
	Total	74	107	17	6	4	75	35

Respectfully submitted.

D. E. BEATY,
Supt. Sec. 1, Class F., Mechanics.

CLASS F—MECHANICS—SECTION 2.

REPORT OF W. M. SMITH, *Superintendent.*

To the State Board of Agriculture:

The following table, giving the number of entries, offerings and awards, gives the extent and character of the exhibit in this department which exceeded that of former years

The ingenuity of inventors and the skill of manufactures displayed in the machinery exhibited, is a matter of surprise even to the most progressive spirit

I would recommend that the following list of entries in Lot 82, be published in the annual report of the department according to precedent, as no premiums are awarded to the class of implements, &c., therein exhibited

The extensive exhibit of agricultural machinery by prominent manufacturers in ample and attractive buildings of their own construction, was a creditable illustration of the enterprising spirit of exhibiters in this department, and the parties are deserving of the highest commendation

Lot	Articles	Entries.	Silver medal		Diploma		Cash premiums.	
			Offered	Awarded	Offered	Awarded	Offered	Awarded
80	Engines and machinery ..	46	27	9	6	5	$20	$20
81	Implements and vehicles .	67	10	5	6	5	55	45
82	Farm machinery .	248	..		.	.	.	
	Total	361	37	14	12	10	$75	$65

LOT 82—MACHINERY ON EXHIBITION

Threshers—
Seymour, Sabin & Co , Stillwater, Minn
W G & W Barnes, Freeport
J I Case & Co , Racine, Wis , by Bergman & Dorman, agents, Freeport

Reapers—
Harris Mfg Co,, Janesville, Wis ; 2 entries
D S Morgan & Co , Brockport, N Y ; 2 entries
Emerson, Talcott & Co , Rockford; 2 entries.
Wm A Knowlton, Rockford; 3 entries
W A Wood, M & R M Co , Chicago; 2 entries
Wm Wise & Co , Freeport
E. W Skinner, Sioux City, Iowa
Bergman & Dorman, agents, Freeport; 2 entries

Mowers –
Harris Mfg Co , Janesville, Wis ; 2 entries.
Samuel D Madden, Lyndon; "Eureka Mower "
Emerson & Talcott, Rockford.
W A Wood, M & R M Co , Chicago, 3 entries
William Wise & Co , Freeport
W G & W Barnes, Freeport
Bergman & Dorman, agents, Freeport; 2 entries
D S. Morgan & Co , Brockport, N Y

Combined Reaper and Mower–
William Wise & Co , Freeport
W. G & W. Barnes, Freeport.

Grain Binders—
Adams & French Harvester Company, Sandwich
W. R. B Smith, Freeport
G H Home, Rockford
Gammon & Deering, Chicago
E. W Skinner Sioux City, Iowa
W A. Wood, M S. R. M. Co., Chicago 1
William Wise & Co , Freeport
W G & W Barnes, Freeport

Horse Rakes—
W G & W Barnes, Freeport; 5 entries.
Wm. A. Knowlton, Rockford; 3 entries
Furst & Bradley Mfg Co , Chicago
J. P Easter & Co , Freeport.
G W. Stoddard, Dayton, Ohio
J W Stoddard, Dayton, Ohio

Horse Power—
Challenge Mill Power, Batavia.

Cider Mills—
S S. Taggart, Ridott.
W. G & W Barnes, Freeport
Whitman Agricultural Company, St Louis, Mo

Corn and Cobb Mills—
W G. & W Barnes, Freeport.

Wind Mills—
Mast, Foss & Co , Springfield, O
Eclipse Wind Mill Company, Beloit, Wis
Jones, Woodruff & Co , Rockford
Batavia Mfg Co , Batavia.
H A Webber, Rockton
G C Palmer, Lamoille
Clark & Co , Samonauk
Challenge Mill Co , Batavia.
Cleveland Bros , Belvidere

Corn Stalk Cutter—
Domihey & Davis, Freedom
R H & C M Avery, Galesburg.
Eureka Mfg Co , Rock Falls

Power Corn Sheller—
P Smith & Co , Sidney, Ohio; 2 entries.
Whitman Agricultural Co , St. Louis, Mo ; 6 entries

Gang Plows—
Richardson & Warren, Roscoe

Walking Plows—
Wm Knowlton, Rockford.
Furst & Bradley Mfg Co., Chicago; 9 entries
J P Easter & Co , Freeport
The J. I. Case Plow Co , Racine, Wis.
Richardson & Warner, Roscoe; 6 entries
Brewster, Dodge & Hughes, Pisa; 15 entries
B D Buford & Co., Rock Island; 4 entries
Davenport Plow Co., Davenport, Iowa. 4 entries
Briggs & Enoch, Rockford; 7 entries
Winn Plow Co , Monmouth.

Riding Plow—
Furst & Bradley Mfg Co , Chicago; 2 entries.
J P Easter & Co , Freeport
The J I Case, Plow Co , Racine, Wis
Richardson & Warren, Roscoe
Brewster, Dodge & Hughes, Peru
B. D Buford & Co , Rock Island
Davenport Plow Co., Davenport, Iowa
Briggs & Enoch, Rockford
E G Whiting, Racine, Wis
Robert Newton, Jerseyville

Harrows—
Harris Mfg Co , Janesville, Wis , 2 entries,
Furst & Bradley Mfg Co , Chicago.
J A Bickford, Rock Falls
Reynolds & Budlong, Aurora; 4 entries
J A Platt, Warren
E. Kinsley, Rockton.

Cultivator—
Harris Mfg. Co , Janesville, Wis.
Emerson, Talcott & Co , Rockford.
Wm A Knowlton, Rockford; 8 entries.
Patrick Brannan, Freeport
W. G & W Barnes, Freeport
Furst & Bradley, Mfg Co., Chicago; 2 entries.
B D Buford & Co , Rock Island; 2 entries
Reynolds & Budlong, Aurora; 2 entries.
Davenport Plow Co., Davenport, Iowa.
Briggs & Enoch, Rockford
Weir Plow Co , Monmouth; 3 entries.
J A. Seler & Co , by Bergman & Dorman, agents, Freeport; 2 entries.

Corn Planters—
Springfield Mfg. Co., Springfield; 3 entries.
Emerson Talcott & Co., Rockford; 3 entries
S. J. Cordon, Winnebago.
Briggs & Enoch, Rockford.
Adams Eckman, Sterling
B H & C. M Avery, Galesburg; 2 entries.
Houston Hay, Coshocton, Ohio.
J A Patterson, Rockfalls.
William Wise & Co., Freeport; 6 entries.
Adam Hickman, Sterling.

Check Rowers—
Houston Hay, Coshocton, Ohio; 2 entries.
Chambers, Baning & Quinlan, Decatur.
J. G. Fawks, Maroa.

Grain Drills—
Springfield Mfg Co, Springfield.
W G & W Barnes Freeport.
G. W. Stoddard & Co, Dayton, Ohio.

Seed Sowers—
Harris Mfg. Co, Janesville, Wis, 2 entries
Wm Wise & Co, Freeport; 2 entries
W G & W Barnes, Freeport; 3 entries.
Emerson, Talcott & Co., Rockford.
Thomas Ludlow & Rogers, Freeport, Bergman & Dorman, agents.

Road Making Machines -
Eureka Manufacturing Co, Rock Falls.
W L McAuley, Arlington, Vt.
J. T. Currier, Neponset, Bureau Co

Scrapers—
Furst & Bradley Manufacturing Co, Chicago
W. L McAuley, Arlington, Vt
American Steel Scraper Co, Sidney, Ohio,; 2 entries

Fanning Mill—
W G & W Barnes, Freeport
Johnston & Field, Racine, Wis.
The Blake Beebe Co., Racine, Wis

Hand Corn Sheller—
W G. & W. Barnes, Freeport; 3 entries

CLASS G—FARM PRODUCTS.

REPORT OF J. PERIAM, *Superintendent.*

Agriculture:

In Class G Farm Products, the exhibition was in every respect, complete and excellent and fully up to that of any previous Fair

Grains were especially to be commended for their excellence.

The cramped space given from year to year, to this department, one of the most important of the various exhibits, it is hoped, may be extended hereafter

Fully three times the space should be accorded that was given this season

It is to be hoped that hereafter, that permanent buildings will be required.

The disastrous effects of the terrible storm, which prostrated the tent in which farm products were shown, nearly ruining the whole exhibit, and putting exhibiters to serious losses, and visitors to great discomfort, would seem to warrant a rule of the Board, that hereafter, that this class of products should be shown in ample and substantial buildings.

I have had the honor to call the attention of the Board to this matter heretofore. No blame, however, is to be attached to the Board.

The local community at the places of holding the fairs, should accept the fact that it is both unwise for the best interests of all concerned, that exhibiters should either be cramped for want of space, or be put to inconvenience from the character of the buildings furnished.

There were no claims for damage to products, so far as I can understand—the exhibitors pretty generally agreeing that under such circumstances, the members of the Board and the Superintendent in charge, had done all that could possibly be expected.

The following table will show the number of entries in the several lots, and the premiums offered and paid:

Lot	Articles	No of Entries	Premiums Offered.	Premiums Paid.
83	Grains and Seeds	119	$244 00	$186 00
84	Vegetables	108	171 00	167 00
85	Butter, Cheese, etc	47	143 00	123 00
86	Bread, Cakes, etc	180	126 00	118 00
	Total	454	$684 00	$594 00

All of which is respectfully submitted,

JONATHAN PERIAM,
Superintendent Class G, Farm Products

CLASS H—HORTICULTURE—Section 1.

Report of George S. Haskell, *Superintendent.*

To the State Board of Agriculture:

The display of fruits and flowers was most creditable, and as an attractive and artistic exhibit, showed a marked improvement when compared with that of previous Fairs

The awards gave general satisfaction, and all concerned appeared well pleased with the splendid floral display

The following table gives further information concerning the exhibit in this department, entries, awards, &c &c

Lot	Article	Number entries	Premiums offered	Premiums paid.
87	Trees, flowers, plants. (Professional)	109	$209 00	$209 00
88	Cut flowers	138	215 00	202 00
89	Flowers and plants (Amateur)	27	88 00	26 00
90	Cut flowers	91	118 00	102 00
		365	$630 00	$539 00

Three diplomas and two silver medals offered
Two diplomas and one silver medal awarded.

Respectfully submitted,

GEO S. HASKELL,
Superintendent Section 1, Class H, Horticulture

CLASS H—HORTICULTURE.—Section 2.

Report of B. Pullen, *Superintendent.*

To the State Board of Agriculture:

I have to report that the exhibition in this department was very full and complete. The exhibit was largely in excess of 1877, as to quantity, and in many respects as to quality, also

The want of space in this department was sorely felt, and is detrimental to the best interest of the society; it engenders feelings of dissatisfaction among exhibiters. They are necessarily limited in space; this in effect prohibits a proper arrangement or display of articles, and is felt to be detrimental to their interests, and must likewise affect injuriously this department in the eye of the general public

I should further state that quite a proportion of exhibits could be placed only n part, and two or three were shut out entirely, for want of room.

Comment will hardly be necessary, as to the character of the buildings that should be required by this Board for the accommodation of this department, after the experience of this year The storm of Thursday, of the week of the Fair, was very disastrous; in many respects virtually ending the exhibition in this class. Exhibiters, as a rule, met their misfortunes without complaint

The following table shows the extent of the exhibition in this department:

Lot	Articles	Number entries.	Premiums offered.	Premiums paid.
91	Home-grown fruits (Professional)	50	$333 00	$282 00
92	Home-grown fruits (Amatuer)	72	102 00	85 00
93	Jellies	137	36 00	36 00
94	Canned fruits	92	60 00	60 00
95	Preserved fruits, jams, etc	121	39 00	39 00
96	Pickles, catsups, etc	56	39 00	38 00
	Total	528	$609 00	$540 00

Respectfully submitted,

B PULLEN,
Sup't Section 2, Class H—Horticulture.

CLASS I—FINE ARTS. CLASS L—NATURAL HISTORY.

Report of James M. Washburn, *Superintendent.*

To the State Board of Agriculture:

The undersigned respectfully reports that the exhibition of specimens for premiums in these classes was during the last Fair about as full as usual

In Class L, Natural History, more numerous than heretofore.

The improvement in excellence of articles exhibited, while, perhaps, not strongly marked was, nevertheless, apparent

We, however, were compelled to regret the total absence of musical instruments which, at the two previous annual fairs had enlivened this part of the exhibition with sweet music

The amount of room for exhibition, was for the first time adequate for the purposes

The award of premiums, so far as learned, created no dissatisfaction.

One improvement in the room for exhibiting articles in Classes I and L is necessary

It should be floored, and the undersigned would recommend that in future in locating the State Fair and making arrangements therefor, the Board should require that the room for Classes I and L be floored

The exhibits and entries are as follows:

CLASS I—FINE ARTS

Lot	Articles	No of entries	Silver medal		Diploma		Cash premium	
			Offered	Awarded	Offered	Awarded	Offered	Awarded
97	Musical instruments	1	6	1	6	...	...	.....
98	Sculpture, painting, etc	60	23	11	24	5	$50	$50
99	Wax feathers, hair-work	42	.	.. ..	1	.. ...	46	28
	Total	103	29	12	31	5	$96	$78

CLASS L—NATURAL HISTORY.

Lot	Articles.	Number entries	Premiums offered	Premiums paid.
107	Botany, mineralogy, &c	14	$225 00	$150 00
108	Entomology, herptology, &c	14	175 00	80 00
	Total	28	$400 00	$230 00

Respectfully submitted,

JAMES M. WASHBURN,
Superintendent Classes I and L.

CLASS K—TEXTILE FABRICS.

REPORT OF E. H. BISHOP, *Superintendent.*

To the State Board of Agriculture

The exhibition of Textile Fabrics was fully equal to that of previous years—the want of space prevented the making proper displa of same.

The number of entries, awards, &c , is as follows.

Lot	Articles	Number entries	Premiums offered	Premiums paid
100	*Mill Fabrics			
101	Household Fabrics . .	93	$90 00	$80 00
102	Hand Sewing	39	40 00	36 00
103	Ornamental Needle-work .	175	130 00	123 00
104	Fancy Work .	126	71 00	57 00
105	Needle-work . . .	79	80 00	62 00
106	Quilts, Needle-work .. .	106	69 00	59 00
	Total	618	$480 00	$417 00

*—17 diplomas offered

Respectfully submitted

E. H BISHOP,
Superintendent Class K , Textile Fabrics

CLASS N—EDUCATION.

REPORT OF EMORY COBB, *Superintendent.*

To the State Board of Agriculture:

The moderate amount of premiums offered by the Board for the encouragement of the educational interests of the state, brought out a very respectable and meritorious exhibit consisting of 174 entries, from 19 counties, and represented 36 schools

The wisdom and popularity of this new departure on the part of the Board, met with a very hearty response from this important interest, and was duly appreciated by a large number of visitors, who minutely examined the display during the week of the Fair Had the announcement of the premium for school exhibits been extensively circulated among the schools earlier in the season, the display would have been much larger, and attracted more general interest It is believed that the continuance of these premiums, with some changes in the classification, will accomplish the desirable result contemplated by the Board, and doubtless induce managers of county agricultural fairs throughout the state to encourage the cause of education in the same way.

It is recommended that the Board grant diplomas, in addition to cash premiums, to the several schools awarded prizes at the last Fair; also, that diplomas be awarded to schools receiving premiums in the miscellaneous class, as large numbers of excellent exhibits of school work displayed were not admissable to competition, on account of the limited classification

The following table gives by lot the number of entries, amount of premiums offered and paid, in this class

I am under many obligations to my able assistant, Prof. C. C Snyder, of Freeport, for the valuable service rendered in this department during the exhibition.

Lot	Articles	Entries.	Premiums offered.	Premiums paid
110	High School.	69	$75 00	$25 00
111	Primary Departments	63	100 00	84 00
112	Rural District Schools	42	125 00	50 00
	Total.....	174	$300 00	$159 00

Respectfully submitted,

EMORY COBB,
Superintendent of Class N, Education

Report of James R. Scott, *General Superintendent.*

To the State Board of Agriculture.

Your Superintendent would report, that in so far as the arrangements for preserving order, and the attention shown to visitors and exhibitors by the assistants and police employed, they were apparently highly satisfactory to all concerned

Respectfully submitted,

JAMES R. SCOTT, General Superintendent

AMPHITHEATRE AND SHOW RING.

Report of J. W. Judy, *Marshal of the Ring.*

To the State Board of Agriculture·

The duties of the Marshal of the Ring were discharged to the apparent satisfaction of exhibiters and visitors

I have no suggestions to make, and desire to tender my sincere thanks to the superintendents of the cattle and horse departments, and other members of the board who heartily co-operated with the undersigned in the discharge of the various duties of the position assigned to me.

Respectfully submitted,

JAMES W JUDY,
Marshal of the Ring.

FORAGE DEPARTMENT.

Report of J. L. Moore, *Superintendent.*

To the State Board of Agriculture:

I would beg leave to report that all the horse and cattle stalls were occupied, and that the number provided by the local committee were not sufficient to meet the demands.

There were only 226 horse and 300 cattle stalls ready for use, while the specifications called for 416 of each, all of which were necessary to supply the stock exhibited, and temporary stalls had to be constructed to meet the demands.

The expense to the board for forage was very small, as the exhibiters were charged the contract price for the same, and the only expense incurred in this department was $60, for delivering hay to the stalls.

The straw furnished by the local committee was of good quality, and the quantity, about 40 tons, supplied the demand.

The feed and forage for the Fat Stock Show was furnished at market prices, by G. H. Floyd & Co., of Chicago, at no expense to the board, and to the entire satisfaction of all concerned.

Respectfully submitted,

J. L MOORE,
Superintendent Forage Department

President Gillham made the following report concerning the aquaria, which was received and ordered spread upon the record:

To the State Board of Agriculture:

Having been appointed to the charge and sale of the Aquaria belonging to the department, I would report further, that at the suggestion of Mr Haskell, I shipped four of them to Mr. Savage, 177 State street, Chicago, for sale, over a year ago

Mr Savage informed me recently, that they were yet on hand

Respectfully submitted,

D. B GILLHAM

On motion of Mr. Washburn,

The Board adjourned to 2:20 o'clock p. m.

AFTERNOON SESSION.

Board met pursuant to adjournment.

President Gillham in the chair.

Present: President Gillham, Vice-Presidents Ellsworth, Emery, Periam, Haskell, Moore, Dysart, Snoad, Cobb, Vittum, Douglas, Beaty, Judy, Smith, Scott, Bishop, Pullen, Stookey, Washburn and Landrigan.

Mr. Periam, from the special committee on damages sustained at the State Fair by reason of the storm, made the following report, which was received and adopted:

To the State Board of Agriculture:

The committee, to whom was referred the claims of W J. Sawyer, of Belvidere, Ill., and Mrs Mary Maxwell, of Reynoldsburg, Ohio, for damages to articles on exhibition in the Horticultural Department, beg leave respectfully to report, that under the circumstances and in view of the advertised rule of the Board, the committee cannot advocate the payment of the losses

On page 4, of premium list, is published under entries, rule 14, as follows: "Diligence will be used by the officers of the Board, to prevent injury to, or loss of animals or articles on exhibition; but the Board will not be responsible for any damage or loss, that may occur"

Much as we deplore the loss occasioned by the tornado, we cannot consider the Board as in any way accountable

We therefore respectfully report that we do not feel authorized to advocate the payment for the losses sustained from the effects of the storm

Respectfully submitted,

JONATHAN PERIAM,
GEORGE S. HASKELL,
B. PULLEN,
Committee.

The following reports of special committees were read, when,

On motion of Mr. Ellsworth,

The reports were received and adopted, as follows:

REPORT OF COMMITTEE ON GRAINS, SEEDS AND VEGETABLES.

To the State Board of Agriculture.

The committee appointed to examine and make awards upon display of grains vegetables, etc , on exhibition at this time, report:

Upon careful examination of the articles separately, upon a scale of merit adopted, we have awarded premiums as follows

First premium, Felix Carver, Springfield, .. . $60 00
Second premium, Fairbury Union Agricultural Society . 10 00
Third premium, J G Pearson and J F. Lyon, Springfield . 25 00

The second premium collection lacked variety in general display, but the articles presented were very superior

The third premium display was most creditable show

Your committee would, in addition to the awards, call attention to the very elegant display of farm products, mosses, etc , by Miss Cleveland, of Springfield, and located at he north end of the Museum

It was not entered, but attracted universal attention for the truly artistic manner of the arrangement

The display awarded the first premium was very complete, and the articles, as a rule, of most excellent quality

Respectfully submitted,

JONATHAN PERHAM,
J M WASHBURN,
D E BEATY,
Committee

REPORT OF COMMITTEE ON NATIVE WINES, CIDER, VINEGAR, ETC.

To the State Board of Agriculture,

Your committee would report that they have examined the Wine, Cider and Vinegar, entered for competition at the winter meeting of the Board, and make the following awards

Best two bottles Catawba Wine, still
Premium, E Baxter & Son, Nauvoo .. . Silver medal

Best two bottles Catawba Wine– sparkling
Premium, E Bonvalett, Belle Park . Silver medal

Best two bottles Norton's Virginia Seedling
Premium, E Baxter & Son, Nauvoo .. . . Silver medal

Best two bottles Delaware Wine
Premium, E Baxter & Son, Nauvoo . . . Silver medal

Best two bottles Clinton Wine.
Premium, E Baxter & Son, Nauvoo . . . Silver medal

Best two bottles Concord Wine:
Premium, E Baxter & Son, Nauvoo . . .. Silver medal

Best two bottles Ives' Seedlings.
Premium, E Baxter & Son, Nauvoo . .. . . Silver medal

Best two bottles Wine, any variety grape (Taylor's Bullet)·
Premium, E Baxter & Son, Nauvoo . . . . . Silver medal

Best two bottles Cider Wine.
Premium, A A Crane, Osco .. . . . . Silver medal

Best two bottles Vinegar.
Premium, Geo Hilliard, Brighton . ... Silver medal

Best ten gallons Cider·
First premium, A C Hammond, Warsaw .. . . Silver medal and $10 00
Second premium, A. A Crane, Osco 5 00

In making the examinations a sample of Ives Seedling Wine was prisented for which there was no premium offered, and as it is a prominent wine of commerce your committee recommend accordingly premium with other varieties.

Your committee also find two samples of catawba wine on exhibition, one of still, and one of sparkling; and as they cannot be considered in competition. and as we consider both samples are worthy of premiums, we would further recommend that these additions be made to the permanent list

Statements giving process of manufacture are given herewith.

Respectfully submitted,

H D. EMERY,
M T STOOKEY,
SAMUEL DYSART,
Committee.

Statement of the process of manufacture and preservation of the wines sent for competition to the State Board of Agriculture, Springfield, Illinois, from the "Golden Hills Vineyards" of E Baxter & Son, in Nauvoo, Hancock county, Illinois

NAUVOO, December 28, 1878.

Two bottles Red Concord, vintage 1876
Two bottles Red Concord, vintage 1877

The grapes, when ripe, are gathered in the usual way, after the dew has dried out; then are run through the mashing mill, the rollers of which are sufficiently apart to allow the splitting of the berry without crushing the seeds The mass is then put in a fermenting tub or vat, with the necessary addition of sugar the best A to bring the must to 85°, by Oeschle's scale

The must of these wines were allowed to ferment about five days, to draw out all the color and tannin possible; taking care, three or four times a day, to push down the floating pomice in the juice below Afterwards it was drawn out, pressed, and stored in the cellar, in a cask filled within five or six inches of the bung, to complete the silent fermentation. A vine leaf and a sufficiently heavy sand-bag are laid over the bung, to keep the outside air out and to allow the safe escape of the carbonic gas. In the latter part of December the wine, when clear, is carefully racked into another cask, well cleaned and rinsed, and previously kept "wine-sweet" by the timely burning of sulphur strips The cask is then filled to the bung, and closed with the bung This wine was racked again in the latter part of March, and was then ready for an early market

We prepare for the second, or spring fermentation, by opening the bung every two weeks and refilling the cask, when we find it necessary; and when we are satisfied the fermentation has fairly set in, the bung is left loose, or is replaced by the sand-bag As soon as the fermentation is over the bung is tightened, and the wine is again carefully racked, in October It is then ready for all purposes of sale

Two bottles of Ives Seedling.—Same process as the Red Concord.

Two bottles of Clinton Same process as the Red Concord, except that the must is brought to an average of 95°, by Oeschle's scale, with the addition of 15 gallons of rain water to the 100 gallons of juice, to reduce excess of acid; and that the fermentation in the vat is only allowed during 48 hours.

Two bottles of Norton Seedling —Same process as the Red Concord, except that the fermentation in the vat is allowed for a full week The must of this wine was brought to 105°, Oechle's scale

Two bottles of Catawba —The grapes are gathered in the usual way, free from dew, are crushed in the evening, put in the fermenting vat until the next morning, when they are pressed, and the juice is brought to a standard of 86°, Oechle scale, is stored in the cellar, and is further taken care of same as Concord

Two bottles of Delaware.—Same process as Catawba; the must being brought to 95° sacharine

Two bottles Wine, from any variety of grapes the product of this state This wine is made from the "Taylor Bullet" grape. same process as the Catawba, the sacharine standard being 105°.

All of these wines are from grapes the product of this state, grown in our vineyards in and near Nauvoo, Hancock county, Illinois; and are offered for competition at the winter meeting of the State Board of Agriculture, of Illinois, to take place on the 7th of January, 1879

E BAXTER & SON

REPORT OF COMMITTEE ON HORTICULTURAL DISPLAY.

To the State Board of Agriculture:

Your committee cannot speak too highly of the extensive and creditable display of fruit on exhibition.

The extent of the exhibit may be better understood when the number of varieties constituting the first premium lot is considered There were nearly 200 varieties of apples, besides pears, quinces, &c., in fine state of preservation, and creditable samples

The second and third premium lots were of rare merit, and the committee experienced much difficulty in deciding the awards, as the specimens were excellent, and the difference in the number of entries not very great

The premiums were awarded as follows:

First premium, Warsaw Horticultural Society $60 00
Second premium, A C Hammond, Warsaw 40 00
Third premium, M L. Dunlap Sons, Champaign 25 00

Respectfully submitted,

GEO S. HASKELL,
B PULLEN,
LEWIS ELLSWORTH,
Committee

REPORT OF COMMITTEE ON FIELD CROPS.

To the State Board of Agriculture.

Your committee on field crops would beg leave to report an increased number of entries as compared with former years for these premiums

The statements accompanying the entries show a very large and profitable yield of the several crops, and are presented herewith as a part of this report.

The committee have awarded premiums as follows:

Best crop Indian corn, five or more acres:
First premium, O. Barnard, Bloomington $25 00

Best crop of onions, not less than ¼ acre:
First premium, Andrew Washburn, Bloomington 10 00
Second premium, O Barnard, Bloomington 5 00

Best crop English turnips, not less than ½ an acre:
First premium, O Barnard, Bloomington 10 00

Best crop timothy hay:
First premium, W W Thornton, Shelbyville 10 00

Respectfully submitted,

D. E BEATY,
J. R SCOTT,
D W VITTUM, JR.
Committee

STATEMENT OF MR. THORNTON.

The field on which the hay was grown was first known to me in 1840. After cultivation by owners and renters it came into my possession in 1875 At that time it had shock corn on it, which would have yielded about eight bushels to the acre, not a merchantable bushel of corn in the whole field

In the early spring, the first of May, 1876, I had the field well broken with common two horse plows, then rolled, then harrowed, a heavy rain occurring before seeding; the field was re-cultivated with an iron and steel tooth cultivator, until pulverized to a depth of eight inches, then rolled, then harrowed with a light harrow, and seeded with timothy seed, using Cahoon's broadcast seeder as follows. The east one-third at the rate of ¼ bushel clear seed per acre, the center one-third at the rate of ½ bushel clear seed per acre, and the west one-third at the rate of 1 bushel clear seed per acre; the whole field was then rolled

The latter part of August after seeding, the meadow was in the following condition, on the east one-third a very large crop of weeds, with occasional timothy, on the center one-third patches of very weakly timothy and fewer weeds, on the west one-third more timothy and less weeds The crop on this portion was estimated at one ton per acre timothy and weeds together

The whole field was cut with a mower, the west one-third raked and stacked for rough feed the other portions were left unraked, and in September re-seeded, in addition to the ripened seed left on by not raking

During the hard frozen weather of '76 and '77 there was hauled about three cords of manure to the acre and scattered evenly from wagon; in the month of April the meadow was thoroughly harrowed and cross-harrowed, the following crop, 1877, yielded three tons and seven pounds actual weight

After harvesting the hay in 1877, the meadow was immediately cross-harrowed to cover up any scattered seed.

Some clover showing itself from the manuring, sheep were turned in to eat the aftergrowth, but not allowed to remain after the clover had been nipped.

The following winter manure was again spread on the meadow, except in two comparatively flat parts, the highest places, where the grass was thinnest, receiving the heaviest coating, about two cords per acre; the meadow was again freely harrowed in April following, and harvested in July 1878, yielding four tons and forty-eight pounds, weighed hay, to the acre, the heaviest three acres yielding four tons six hundred and forty-one pounds per acre, the middle three acres yielding four tons two hundred and thirty-nine pounds per acre.

Since harvesting this crop, clover and some weeds appeared in August The mower with shoes raised so as to cut about six inches above surface, was passed over meadow, clipping all clover and weeds off before their seeds had time to ripen.

Expenses for harvesting meadow, July, 1878:

3½ days mowing machines at $3	$10 50
4 days, two wagons, at $2.50 each	20 00
2 laborers pitching hay, 4 days each, at $1 25	10 00
2 laborers stacking, 3 days each, at $1 25	7 50
1 Tedder and raker for 3 days, $2 per day	6 00
33 cords of manure, at $1 50 per cord	49 50
2 days harrowing, at $2 per day	4 00
	$107 50

Credit:

July 15, 1878, by 68 tons hay, at $3.50 per ton (the then estimated price)	$238 00	
Expenses	107 50	
Net proceeds of hay from meadow		$130 50

The actual cash paid out was $17 50 being for labor, the teams, mowers, &c , being my own and used for harvesting, harrowing, hauling manure, &c

W. W THORNTON.

SHELBY COUNTY:

W W. Thornton being duly sworn, says that he raised a crop of hay the past season upon the land surveyed by P R. Webster and that the quantity of hay grown thereon was four tons and forty-eight pounds per acre, determined by actual weight, at the rate of two thousand pounds to the ton; that he was assisted in havesting and measuring by Christy Fegan; that the statement annexed, subscribed by this deponent as to the manner of cultivation, expense, etc , is in all respects true, to the best of his knowledge and belief, and that the sample of hay exhibited is a fair average sample of the whole crop.

W W THORNTON

Sworn to before me, this 28th day of December, 1878.

[SEAL.] J. WM. LLOYD, Notary Public

SHELBY COUNTY:

Christy Fegan being duly sworn, says that he assisted W W Thornton in harvesting, getting out and weighing the crop of hay referred to in the above affidavits, and that the quantity of hay was four tons and forty-eight pounds per acre, and was grown upon said ground as stated in the affidavit of W W Thornton

CHRISTOPHER FEGAN

Sworn to before me, this 28th day of December, 1878

[SEAL] J WM. LLOYD, Notary Public

SHELBY COUNTY:

P R Webster, being duly sworn, says he is a surveyor; that he surveyed with chain and compass, the land upon which W W. Thornton raised a crop of hay the past season; that the land is one contiguous piece, and the quantity is 16 2-100 acres, and no more

PHIL R WEBSTER, Surveyor

Sworn to before me, this 28th day of December, 1878.

[SEAL] J WM LLOYD, N. P.

Statement by O Barnard —Preparation land, mode of, and cost of culture, harvesting, etc , of crop onions, turnips and corn

Onions were grown on land planted to onions for past five years in succession Last fall there was perhaps ten loads rotten manure and wash deposits from bed of slough, put on one-fourth acre; plowed shallow, say, four inches; in spring, top-dress with six loads rotten manure, and well harrowed in; ground thoroughly pulverized by roller and drilled in rows sixteen inches apart, at the rate of three lbs home-raised seed per acre.

COST.

To 16 loads manure and wash, including cost of hauling, hand and team per day	$2 50
To half day plowing and preparing land	1 25
Quarter day drilling, at 75 cents per day; working three times with wheel hoe 2 days, and to hand-weeding 3 days—total 5¼ days	3 93¾
Harvesting 1 day, 75 cents; pulling 1 day, 75 cents: 1 day hauling, 2 50; 3 days dressing, 2 25	5 50
Marketing, two miles to city	10 00
Rent of land, $1; seed 75 cts	1 75
	$24 93¾

Sold whole amount—134 bushels—at 40 cts per bushel	$53 60	
Net profits on one-fourth acre		28 66¼

Varieties of seeds, half Red Wethersfield, one-half Willow Clover.

The turnip land was meadow land, broken and sown to turnips in August, 1877; rebroke in fall, and in spring of 1878 drilled to dwarf peas, from which I realized $74 35, gross, for product of three-fourths acre. After peas were off, well broke again, and fourteen loads of well-rotted manure put on three-fourths acre, and well worked in. Drilled in rows sixteen inches apart.

EXPENSE ON HALF ACRE TURNIPS.

Breaking and harrowing, and rubbing to pulverize, 1 day, at $2 per day	$2 00
8¾ loads manure, 30 cents per load for hauling	2 60
Half day drilling, 37 cents; 1 lb seed, 30 cents; 2 days work, wheel hoe, $1 50	2 17
Thinning and hand-weeding, 4 days	3 00
Pulling and topping 228 bushels, at 1½ cents per bushel	3 32
Marketing, peddling out, 5 cents per bushel	11 40
Rent of land, second crop, at $4 per acre, divided	1 00
228 bushels sold, at actual cash average of 31 cents per bushel $70 68	
Total cost	$25 49
Net profit on half acre turnips	45 19

The seed was of the Purple-top English Flat turnip.

Signed, O. BARNARD.

The corn ground was in potatoes in 1877; was manured, spread green, as hauled from city stable, 15 loads per acre, turned under six inches deep in spring; about first of May, checked by 3-mark marker, after thorough preparation by harrow and roller: planted by hand, three feet eight inches each way, three to four kernels to hill; harrowed again before up; cultivated four times with 2-horse cultivator

TOTAL COST.

5 acres land, $4 00 per acre	$20 00
75 loads manure, 20 cents per load	15 00
Breaking and preparing to plant, 5 days at $2 00 per day	10 00
2 hands, 1 day each, 75 cents	1 50
Harrowing and cultivating five times, 3⅓ days	6 66
Hand weeding and harrowing, 25 cents per acre	1 25
Gathering 347 bushels, at 2 cents per bushel	6 98
Total cost	$61 39
347 bushels corn, now worth 22 cents per bushel	76 34
Profits	$14 95

I fully expected 160 bushels per acre, but a storm in August blew it flat, and damaged it fully 30 bushels per acre

COUNTY OF McLEAN, }
STATE OF ILLINOIS }

O. Barnard being duly sworn, says that he raised a crop of onions the past season, upon the land surveyed by Andrew Washburn, and that the quantity of onions grown thereon was 134 bushels, determined by actual measure Also, a crop of turnips the past season, upon the land measured by Charles Bunzendahl, and the quantity of turnips grown thereon was 228 bushels, determined by actual measure Also, a crop of corn the past season, upon the land measured by C. Bunzendahl, and the quantity of corn grown thereon was sixty-eight bushels and 40 pounds per acre; that he was assisted in measuring all of each crop by C Bunzendahl; that the statement annexed, subscribed by this deponent, as to the manner of cultivation and expense, &c, is in all respects true, to the best of his knowledge and belief, and that samples of all the crops are a fair average of the whole crops. O. BARNARD.

Sworn to before me, this 7th day of December, 1878
[SEAL.] JOHN M. HAMILTON,
Notary Public

STATE OF ILLINOIS, }
McLEAN COUNTY. }

Andrew Washburn being duly sworn, says he did help survey, with a good and correct measure, the land on which Osborn Barnard raised a crop of onions the past season. That the land is one contiguous piece, and the quantity is one-fourth acre, and no more.
ANDREW WASHBURN.

Sworn to before me, this the 9th day of December, 1878.
[SEAL.] CHAS F. WERTZ,
Notary Public

STATE OF ILLINOIS, }
McLEAN COUNTY. }

Charles Bunzendahl being duly sworn, says he assisted O Barnard in measuring, harvesting and getting out his crop of onions, turnips and corn, referred to in the affidavits made, and the quantity of onions was one hundred and thirty-four bushels, and eight pounds, from one-fourth acre. The quantity of turnips was two hundred and twenty-eight bushels, from one-half acre. The yield of corn was sixty-eight bushels and forty pounds per acre, all of which was grown on land as stated in the affidavit.
CHAS BUNZENDAHL.

Sworn to before me, this the 7th day of December, 1878.
[SEAL] JOHN M. HAMILTON,
Notary Public.

STATE OF ILLINOIS, }
MCLEAN COUNTY }

Charles Bunzendahl, being duly sworn, says he did help survey and measure, with a correct measure, to-wit: a good tape measure, the land upon which O Barnard raised a crop of turnips the past season; that the land is one contiguous piece, and the quantity is one half acre, and no more

Also, the land he raised a crop of corn on the past season, and quantity measured, was 5 acres, and no more; of a field of near 10 acres; the 5 acres being in one contiguous piece CHAS BUNZENDAHL.

Sworn to before me, this, the 7th day of December, 1878.
[SEAL.] JOHN M. HAMILTON. Notary Public.

STATEMENT OF ANDREW WASHBURN—ONIONS.

The land is a light clay loam; was plowed in the fall of 1877, and in the spring of 1878 cultivated with a double shovel, harrowed thoroughly and smoothed with a planker, and the seed sown with a seed drill on the 15th of March, 1878; using seed—Red Wethersfield variety—at the rate of 5 lbs per acre There was no manure applied for the crop of onions, but the ground had been previously well manured with stable manure for the crops that grew on the ground in 1876 and 1877 The crop was cultivated with a wheel hoe five times, and hand-weeded three times by boys, using "Noyes' Hand-weeders." The cultivation was thorough and the weeds almost a minus quantity during the season, for the land had been subjected to clean cultivation the two previous seasons

After the onions were well off, the land was manured with rotten stable manure and put in condition for a crop of spinach, which was sown September 4, 1878 The spinach is now good, and gives promise of an abundant crop.

DR:		
To cost of plowing and cultivating		$1 00
To cost of harrowing and planking		1 00
To cost of seed and sowing		1 50
To cost of wheel hoeing, at 80 cents per day		2 00
To cost of weeding, at 30 and 25 cents per day, by boys		3 85
To cost of harvesting and topping		5 00
To cost of marketing		9 00
To cost of rent of ground, or interest on its value		5 00
		$28 35
CR:		
By 154 bushels of onions, at 40 cents per bushel	$61 60	
Profit on the crop		33 25

ANDREW WASHBURN

STATE OF ILLINOIS, }
MCLEAN COUNTY } ss.

Osborn Barnard, being duly sworn, says he helped survey, with a good and correct measure, the land upon which Andrew Washburn raised a crop of onions the past season; that the land is one contiguous piece, and the quantity is one-fourth of an acre, and no more

O BARNARD.

Sworn to before me, this 9th day of December, 1878
[SEAL] CHAS F WERTZ, Notary Public

STATE OF ILLINOIS, }
MCLEAN COUNTY }

Albert Buck, being duly sworn, says he assisted Andrew Washburn in raising, harvesting and measuring his crop of onions, referred to in the above affidavits; and that the quantity of onions was 154 bushels, and was grown upon said ground as stated in the affidavit of Osborn Barnard.

ALBERT W BUCK.

Sworn to before me, this 9th day of December, 1878
[SEAL] CHAS F. WERTZ, Notary Public.

STATE OF ILLINOIS, }
MCLEAN COUNTY. } ss.

Andrew Washburn, being duly sworn, says that he raised a crop of onions the past season, upon the land surveyed by Osborn Barnard; and that the quantity of onions grown thereon was 154 bushels, determined by actual measure; that he was assisted in harvesting and measuring by Albert Buck; that the statement annexed, subscribed by this deponent, as to the manner of cultivation, expense, etc, is in all respects true, to the best of his knowledge and belief; and that the sample of onions exhibited is a fair average sample of the whole crop.

ANDREW WASHBURN

Sworn to before me, this 9th day of December, 1878
[SEAL] CHAS. F. WERTZ, Notary Public.

The following report on road making was read, and,
On motion Mr. Beaty,
Adopted:

REPORT OF COMMITTEE ON ROAD MAKING.

To the State Board of Agriculture:

Your committee, to whom was referred the entries for premiums in road-making, for the greatest number of miles of earth road graded during the year 1878, would report as follows:

There were six entries in all, which report the grading of 100 miles of road, at an average cost of $122 93 per mile. The particulars concerning each entry are shown in the following table.

The greatest number of miles reported in any township is that of Ash Grove township, in Iroquois county, which was 30 miles, at an average cost per mile of $63.50, the others ranging from 8 to 23 miles.

The lowest cost per cubic yard of earth was 1 7-10 cents, in Ash Grove township, which having made the greatest number of miles of road at the least expense, is awarded the premium

TABLE, *showing an average cost* $122.93 *per hundred miles of road.*

Township.	County	Miles graded	Width of road-bed between ditches, in feet	Average depth of earth in inches put in centre of road-bed	Cubic yards of earth per mile.	Cubic yards of earth moved	Cost per cubic yard n cents	Average cost per mile	Implement used.	Soil.
Rantoul. . . .	Champaign .	14	20	26	4.237	59 318	3 3	$140 00	Wauchope Grader and scraper.	Black, sticky prairie soil..
Newcomb....	Champaign .	12	20	18	2 933	35,196	6 5	193 00	Champaign Grader & scrapers	Sandy loam. ... .
Groveland...	LaSalle .	13	45	16	5,866	76,258	2.7	160 00	Road Grader	Black loam. .....
Ash Grove...	Iroquois . . .	30	25	18	3,716	111.480	1.7	63 50	Wauchope Grader	Black loam. ... .
Squaw Grove.	DeKalb . ..	8	25	21	4,277	34,216	2	99 41	Grader and scraper.....	Black earth and clay.....
Stockland... .	Iroquois	23	21	20	3,422	78,706	2 3	81 71	Wauchope Grader	Black loam.... . .....

Respectfully submitted,

SAMUEL DYSART,
J M WASHBURN,
JOHN LANDRIGAN,
Committee.

Mr. Douglas introduced the following resolutions, which were adopted:

Resolved, That we extend to Hon J. Perlam and Hon. J. W Judy, members of this Board, who retire, at the close of the present term, from active and faithful service of the Illinois Department of Agriculture, the assurance of our unreserved confidence and respect, and tender them the heartiest thanks of the people of the state, for their long continued, conscientious and gratuitous labors on behalf of the industrial interests of the commonwealth

Resolved That the secretary of the Board is hereby instructed to furnish each of the retiring members with a copy of this resolution.

Motion Mr. Beaty, carried—

That 9 o'clock a. m., to-morrow, be made the time for receiving the reports of superintendents of departments, concerning the Fat Stock Show.

Motion Mr. Beaty, carried—

That the President appoint two members, to act with him as a committee to prepare a programme for the evening meeting.

President appointed Messrs. Beaty and Cobb.

W. H. Lightfoot, Springfield, presented the following protest:

To the State Board of Agriculture:

I hereby protest against the award of the second premium, on Grains, Vegetables, etc., for the following reason: That said premium is offered for the best and largest display of grains and vegetables; and I hereby claim that the second premium exhibit is not the second largest display

W H. LIGHTFOOT

The committee explained that they were influenced by the superior quality, and not the quantity.

Mr. Ellsworth moved,

That the protest be declared sustained. Motion lost.

On motion of Mr. Cobb,

The Board adjourned to 9 o'clock, a. m., to-morrow.

THURSDAY, January 9, 1879—9 o'clock a. m.

Board met pursuant to adjournment.

Present—President Gillham, Vice Presidents Ellsworth, Emery, Perriam, Moore, Dysart, Snoad, Cobb, Vittum, Douglas, Judy, Scott, Bishop, Pullen, Stookey, Washburn and Landrigan.

Minutes of yesterdays' proceedings read and approved.

The special order being the consideration of the reports relating to the Fat Stock Show, the following were read, and,

On motion of Mr. Beaty,

Adopted:

FAT STOCK SHOW.

CLASS A—CATTLE.

REPORT OF SAMUEL DYSART, *Superintendent.*

To the State Board of Agriculture;

The exhibition of fat cattle was most creditable, both as to number and quality

The description of the several rings is so fully given in the reports of the judges, presented herewith, that their publication in the forthcoming report of the Department is recommended

Respectfully submitted,

SAMUEL DYSART,
Superintendent Class A, Cattle.

CLASS C—SHEEP.

REPORT OF D. W. VITTUM, JR., *Superintendent.*

To the State Board of Agriculture:

The number of entries of fat sheep was not as large as expected, but the quality reflected much credit upon the feeders.

The exhibit was made up of Cotswold sheep and their crosses, and included choice specimens from the leading breeders from Canada, Michigan and Illinois.

The total number of sheep on exhibition was 85 head

The classification did not meet the views of breeders, generally, and changes will be suggested when the premium list is considered.

Respectfully submitted,

D W VITTUM, JR ,
Superintendent Class C, Sheep

CLASS D—SWINE.

REPORT OF M. T. STOOKEY, *Superintendent.*

To the State Board of Agriculture:

The display of swine was very limited and caused much disappointment to those especially interested in this department of the exhibition

The quality of the stock was all that could be desired and represented the following breeds, viz : Poland China, Berkshire Chester White, Essex and crosses

The criticisms of the classification of premiums by breeders, feeders and exhibiters will be reported, and suggestions made concerning the offerings for the next show at the proper time

Respectfully submitted,

M T STOOKEY,
Superintendent Class D, Swine

CLASS E—POULTRY.

REPORT OF H. D. EMERY, *Superintendent.*

To the State Board of Agriculture:

The display of poultry at the Fat Stock Show was very meagre, only three coops of fowls and one capon being entered.

A fine and very creditable display of game was made by Sloan Bros of Chicago.

Respectfully submitted,

H. D. EMERY,
Superintendent Class E, Poultry

J. W. Bunn, Treasurer, made the following reports, which were received and referred to the finance committee.

TREASURER'S REPORT.

State of Illinois in account with JOHN W. BUNN, *Treasurer.*

Illinois State Board of Agriculture:

		Cr		
1878.				
January 4	By unexpended balance.	Secretary's salary.....	$100 00	
		Clerk hire	92 00	
		Library	859 53	
		Office expenses	186 60	
		Crop report	138 81	
		Porter	150 00	
July.... 2	By amount received from	State account premiums	3,000 00	
		Secretary's salary. . . .	2,000 00	
		Clerk hire.	1,000 00	
		Library.	1,000 00	
		Crop report	1,000 00	
		Office expenses	500 00	
		Porter.. .	300 00	
		County agricultural boards	7,500 00	$17,826 94
		Dr		
	To premium account Illinois State Fair		3,000 00	
	Secretary's salary		2,000 00	
	Clerk hire		1,092 00	
	Crop report		872 50	
	Library		1,173 68	
	Office expenses $220 41, postage $264 18, express $202 01.....		686 60	
	Porter		450 00	
	Each of the following 75 county agricultural boards, viz: Adams, Boone, Brown, Bureau, Carroll, Cass, Champaign, Christian, Clark, Coles, Crawford, Cumberland, DeKalb, DeWitt, Douglass, DuPage, Edgar, Edwards, Fayette, Ford, Franklin, Gallatin, Greene, Grundy, Hardin, Henderson Henry, Iroquois, Jackson, Jasper, Jefferson, Jersey, JoDavies, Kane, Kankakee, Kendall, Knox, Lake, LaSalle, Lawrence, Lee, Livingston Logan, Macon, Macoupin, Mason, Massac, McDonough, McHenry, McLean, Menard, Mercer, Montgomery, Morgan, Moultrie, Ogle, Peoria, Perry, Piatt, Pike, Pope, Putnam, Randolph, Sangamon, Schuyler, Shelby, Stark, Union, Vermillion, Warren, Wayne, Whiteside, Will, Williamson, Winnebago		7,500 00	
	To unexpended appropriations, library		685 85	
		crop report . .	266 31	
		Secretary's salary	100 00	$17,826 94

JOHN W BUNN,
Treasurer

SPRINGFIELD, ILL , January 9, 1879.

Illinois State Board of Agriculture in account with JOHN W. BUNN, *Treas.*

STATE FAIR.

		Cr		
1878.				
January . .. 4	By balance		$8,669 28	
July . 2	amount received from the State account premiums		3,000 00	
September. 20	amount received gate fees, Freeport fair, $12,573 25			
eptember..20.	amount received booths and privileges.	2,402 20	14,975 45	

	FAT STOCK SHOW.			
December . . 9	By amount received gate fees $2,629 10			
	" " permits, etc 155 96			
	" " stalls and pens 239 00			
	" " Union Stock Yards . 1,000 00			
	" " Grand Pacific Hotel .. 200 00			
	" " Palmer House 200 00			
	" " Atlantic Hotel 25 00			
	" " Prairie Farmer Co . . 50 00			
	" " Western Rural . . 50 00			
	" " Farmer's Review . 50 00			
	" " Am Poultry Journal 25 90		$4,624 06	$31,268 79
	STATE FAIR AND BOARD EXPENSES			
	Dr			
December . .31	To traveling expenses, board.		$1,103 64	
	To postage		144 42	
	To printing and advertising		1,571 07	
	To stationery		87 83	
	To hotel bills at Freeport		385 00	
	To meals at fair ground		346 82	
	To music fair ground		175 00	
	To livery during fair.		385 00	
	To police fair		368 00	
	To gatemen		307 35	
	To lumber fair stalls, etc		504 22	
	To use engine machinery department		350 00	
	To wood for engine		31 50	
	To hauling hay and water at fair . .		94 25	
	To use exit ground and moving fence . .		90 00	
	To use furniture fair ground		8 25	
	To sundries fixing Floral Hall		40 30	
	To sundries other departments fair		135 60	
	To assistant superintendents		615 70	
	To clerks for secretary during fair		125 80	
	" " treasurer " " .		200 00	
	" " auditor " "		109 70	
	To Dr. N. H Paaren, veterinary services at fair.		60 00	
	To boxes shipping Agricultural Reports		31 25	
	To Treasurer's commissions		392 00	
	To cases and sample jars Agricultural Museum .		195 02	
	To porter's services Department Agriculture . .		150 00	
	To clerk hire Secretary's office, Department Ag'l .		78 46	
	To labor on Fair grounds		99 98	
	To premiums class A—Cattle			
	B—Horses .. .			
	C—Sheep . .			
	D—Swine			
	E—Poultry . .			
	F—Mechanics			
	G—Farm Products ..			
	H—Horticulture . .			
	I—Fine Arts			
	K—Textile Fabrics			
	L—Natural History			
	M—Equestrianism			
	N—Education..			
	Previous year .... $ 23 00		12,388 34	20,634 59
	Expenses fair and board in 1878 over receipts, $6,317 79			
	FAT STOCK SHOW EXPENSES.			
	To traveling and hotel expenses Board		$598 96	
	To printing and advertising		534 30	
	To expenses awarding committees		141 95	
	To police		96 95	
	To music		235 00	
	To gas bill		131 20	
	To clerks Auditor's office.....		74 00	
	To clerks Treasurer's office		66 00	
	To rent Exposition building		281 06	
	To Assistant Superintendent Class C.		27 50	
	To labor		74 00	
	To making stalls, pens, etc.....		397 75	

To Feed and shipping hogs and sheep, stock yards ..		$22 20	
To premiums Class A—Cattle....	$1,555 00		
C—Sheep.....	290 00		
D—Swine	430 00		
E—Poultry and Game....	120 00	2,395 00	$5,075 87
Expenses Fat Stock Show over receipts, $451 81			
WINTER MEETING, 1879			
To expenses Board		$205 65	
To premiums winter meeting Exhibition		453 00	658 65
By balance			4,899 68
Total			$31,268 79

JOHN W. BUNN,
Treasurer.

SPRINGFIELD, ILL , January 9, 1879.

Board took a recess until 2 o'clock p. m.

Board met after recess.

Present as before.

The finance committee made the following report which was received, and,

On motion of Mr. Ellsworth,

Adopted:

REPORT OF COMMITTEE ON FINANCE.

To the State Board of Agriculture

Your committe to whom was referred the reports of the Treasurer for the year just closed would respectfully report that they have carefully examined the same with accompanying vouchers and find it correct.

Respectfully submitted,

EMORY COBB
E H. BISHOP
M T. STOOKEY
Committee.

President Gillham, made the following farewell address, which,

On motion of Mr. Ellsworth:

Was ordered spread upon the journal, and the thanks of the board extended to the retiring President for the faithful and valuable services rendered the Agricultural interests of the State during his long continuance as a member of the Illinois State Board of Agriculture:

PRESIDENT'S ADDRESS.

Gentlemen of the State Board of Agriculture of Illinois:

In closing my second term of office, I ask your indulgence in briefly reviewing a portion of the work of the past four years.

It may be well for the Board, while at all times to be awake to the possibilities, and especially to the absolute duties demanded at your hands for the proper encouragement of the various industries that come within the legitimate scope of the department, occasionally to pause and review the work done, and carefully to note the results, that we may be prepared to judge more correctly of that of the future, to the end that the best interest of the industrial classes be subserved, and the general prosperity of the State thereby be promoted.

STATE FAIR.

The aggregate amount offered by the Board in premiums the last four years is over $60,975, making a large average increase in premium, when compared with former years.

The awards have all been paid in full, notwithstanding the fact that only one of the four fairs was favored with pleasant weather during the entire week, without which the attendance must be comparatively small, and therefore the receipts necessarily limited.

The number of entries in all the departments, however, have exceeded those of any corresponding period, and the character and quality of the stock and articles on exhibition has shown marked improvement, and none more than that class of labor-saving machinery designed to assist the husbandman in cultivating and harvesting his crops, while the advantages secured to the producers, breeders of improved stock and manufacturers adjacent to the points where the fairs have been held, can hardly be estimated; yet history repeats itself that a new era of enterprise and improvement follows in the wake of our annual exhibitions. The section of country where we held the last series of fairs has not had the advantages of a State fair for nineteen years, and the difference in the improved condition of live stock, no less than the improved mode of general farming during that period, could only be realized by personal inspection, and the influence of the fairs just closed will as in the past, give greater impetus than ever to the progressive spirit of all engaged in industrial pursuits, and although the treasury of the Board does not show so large a balance as four years ago, which is largely, if not generally, attributable to unfavorable weather, yet it is safe to say that no better investment of its accumulations could have been made than in stimulating the industries of the north and western portions of the state

WINTER MEETING EXHIBITION.

The recent change in the classification of premiums awarded at our winter meeting has resulted in enlarging the exhibition of fruit-farm products, etc

This exhibition attracts each succeeding year a larger attendance of visitors, and furnishes a very instructive lesson to those interested in the productive resources of the state; yet the fact remains, that it has not, as it should have done, attracted the attention of producers of all sections equally, and hence have grown to that point of excellence that its importance demands, and that it ought to reach; and I entertain the hope that our more enterprising county Boards, as well as the more earnest of our citizen producers will give it that attention that its importance demands.

PREMIUM FIELD CROPS

The removal of the limit as to the yield per acre of the various farm crops has encouraged a somewhat increase in numbers, to compete for the liberal premiums offered in that direction, and it is to be hoped that that important feature of the exhibition will now steadily increase from year to year, and statistics of great value to the producers of the state should result from these offerings; and any means that the Board can reasonably furnish, that will increase competition in this direction, should be adopted, in order to render the exhibition at the winter meetings what it ought to be—a grand school of object teaching

ROAD-BREAKING AND ROAD-MAKING MACHINERY

The subject of road-breaking and road-making machinery, in my judgment, comes very properly within the scope and purview of this Board, and should receive that attention that its importance to the farmers—of our state, in particular—demands.

The one hundred dollar premium, offered in 1875 for that purpose, established the fact, that machinery for road-making was a possibility, and that earth roads could be cheaply built and kept in repair with machinery, at a great saving of labor and time, on our level prairie lands. This enterprise by the Board, small as it was, has proven to be worth many times more than its cost It stimulated further inventions, as well as material improvement in that class of machinery. It also encouraged township and road districts to purchase and use improved machinery for road-making; and the result of the expenditure of even one hundred dollars has been felt in many portions of the state While the same machinery is equally adapted to ditching, which, in our state, renders its use of double importance

CROP REPORTS

The Board has inaugurated a system of crop reports and agricultural and other statistics, gathered through direct correspondence by our Secretary, from all sections of the State, at monthly intervals, that has met a most cordial welcome at the hands of the industries, as well as the more intelligent in other phases of life, over the entire State, and even extending to other portions of the country, as attested by their ready publication by the prominent daily commercial and agricultural press; this, together with the many inquries from all sections for these reports, warrants the declaration that the work done in this direction has done as much to popularize the Department as anything hitherto done, and clearly indicates the estimation in which they are held by the public generally

The past experience and suggestions from eminent authorities who have manifested a

lively interest in this work will encourage the Board to extend the scope and improve in various ways the value and usefulleness of these reports from year to year. As their importance has been noted by local correspondents from time to time, these reports have broadened and widened, until from the single sheet of three years ago, when the enterprise was begun, they now occupy a pamphlet of from 24 to 48 pages of closely printed matter

The addition of the meterological statistics from the three grand divisions of the State, has added largely to the value of these reports, and supplies a much needed information that is highy prized by leading agriculturists and scientists, a careful study of which in connection with the report of the signal service by our farmers would prove of incalculable value for the present, no less than a matter for reference for succeding years

The publication of the market prices of farm products at the great market centres is a new feature of the reports this year, and fills another niche of information that our farmers remote from such markets, have great need of, where the bulk of their various crops is sold.

OFFICIAL STATISTICS.

The agricultural statistics gathered by assessors in May last, in accordance with the act of the last General Assembly, while far from complete, are of inestimable value in approximating the extent of the various crops grown in the State, and concerning which so little has heretofore been known; would it not be well that these reports be published in pamphet form for immediate use and distribution to the press of the State and all others interested therein? The increasing importance of having complete agricultural statistics makes it unnecessary to even suggest action on the part of the Board looking toward the adoption of more effective legislation that appears neeessary in order to accomplish this desirable result.

DRAINAGE

This, perhaps the most important subject to the farmer of Illinois, has doubtless had less attention from the Department than its very material importance, owing to the topographical construction of large and nearly level plains of which so great a portion of her best farming lands are composed, would seem to demand

Viewing the matter from this standpoint the Department, during the last two years, has labored many ways to encourage among our farmers to at least a beginning of what is ultimately, we hope, to be a liberal system of drainage

To this end, and also to shed the light at our command upon correct principles of underdraining, on the 8th of June last, the Department issued circular No 13, entitled "Farm Drainage" The introduction as stated by our efficient Secretary, set forth "That it was not intended as an exhaustive treatise on the subject, but was published for the benefit of those who contemplate underdraining their farms, and who desire some suggestions relating to the work, as well as results obtained by those who have had more or less practical experience"

The essay was prepared by Mr H W S Cleveland, of Chicago, a practical engineer, who has given the subject much study and whose statements are verified by the results of practical experience and careful observation It also embraced "Important Results from Drainage," from the Hand Book of Husbandry, by George E Warring, Jr., Esq, of Newport, Rhode Island The essay gave practical suggestions as to how effective drainage was to be done, and plans for doing it, that those who were driven to it on account of the continued wet seasons of the past four years could prosecute systematically their work, feeling that starting right was all-important

The circulars also contained statistics in tabular form, showing by counties the number of acres in each, the number of acres of wet lands, total value of wet land when not drained, and the increased value of wet land when drained.

Besides giving the requisite knowledge of how to do the work, it tells the farmer where he can procure his tile, by giving the number and location of manufacturers, also giving the number of feet of a given size per acre, the number of feet to the car-load of each size, the carrying capacity per minute by gallons, the amount of tile made in the State in the years 1876 and 1877, closing with the results of tile draining by the experience of several gentlemen in the State who had been conducting a series of experiments.

The circular as a whole comprises a pamphlet of twenty-four pages of closely printed matter, and the edition ten thousand, the total cost of which was $101 25, and yet the demand by railroad companies, tile factories and the land owners of the State, was far beyond the supplying capacity of the edition printed

The Chicago Fat Stock Show was another new departure by the Board, and marks an important era in the meat interest of the State and nation.

The recent development of a large and unlimited profitable foreign demand for our best fat cattle, sheep and swine seems to necessitate the establishment at Chicago—the greatest live stock market of the world—an exhibition of this character, where the most creditable specimens produced on this continent, could be brought together, to the end that the best results attained by our breeders and feeders could be critically examined and compared, and the information obtained therefrom, and the valuable qualities of product of such results advertised to the world as a matter of useful and practical information.

THE EXHIBITION.

Although more than doubling the labors of your executive officers, as an initial movement was a grand success, and as a school of instruction for feeders, breeders and dealers, has performed a most important part, and no doubt will mark a material change in

favor of the earlier maturity of and consequently more profitable production of a better quality of meat in this country.

After well directed efforts by the Board, for more than a quarter of a century, to encourage at our State fairs, by very liberal premiums, the breeding of the best stock for the most profitable productions of meat of extra quality, it seems most appropriate, now on the part of this Board, to inaugurate this practical school of instruction, which should be, and was, national in its character for feeders and breeders, where the ultimate test of the butcher would be called to decide as to the quality and value of animals exhibited for furnishing the greatest portion of valuable meat, to live weight

The judgment of the committees, with hardly an exception, was approved by experts of long and practical experience in butchering the best quality of stock, and the conclusions and suggestions contained in the reports of the committees furnish much valuable information to the general public, and I think should at an early day be published in a catalogue, giving ages, weight, measurements, breeding of animals exhibited, and any other information concerning the exhibition of interest to the public generally

And although the exhibition was made at the expense of doubling the work of the officers as before stated, and at some sacrifice to the treasury, also, yet I think the information gained by all interested, (and that includes breeders, feeders, dealers and consumers was worth many times more than the sacrifice made, and also proved that improved blood for feeding purposes does not stand on the order of line breeding, but that the system of miscellaneous comingling of good blood is more to be desired by our farmers.

MUSEUM

Although much has been done in this direction, much yet remains to be done The only branch approaching completion is that of entomology, while there is a respectable collection of the cultivated and natural products of easy preservation, not only of this State but of many foreign sections, which taken as a whole, form a creditable nucleus to what promises to be one of the chief attractions of the State House

The many advantages of having an exhibition at the State capital of a creditable collection of the products of the State is apparent to all, and the earnest efforts of the Board in this direction should be continued.

THE LIBRARY,

Aided by the appropriation by the last General Assembly has been much improved and enlarged, and contains complete sets of all the herd and stud books, both of this country and Europe, and also a complete collection of all the standard works relating to agriculture, horticulture, botany, entomology, chemistry, geology, etc. As it is one of the very important features of the department, no pains should be spared in keeping it equal to its increasing demands

SCIENTIFIC CORPS

The sciences of Botany, Geology, Chemistry, Entomology and Veterinary, are creditably represented in the gentlemen selected in accordance with a resolution of the Board adopted at the last annual winter meeting

The necessity of having all the sciences relating to agriculture represented on the working staff of the Board has often been referred to, and the many advantages to the general public resulting from the co-operation of this additional force is apparent when the increasing number of inquiries received at the department pertaining to those specialties is considered

The papers relating to the several sciences named, which have been prepared by these gentlemen for the forthcoming agricultural report, are practical information that will be highly prized by the progressive farmer of this State

The Secretary's office has been supplied with absolute necessities only out of the appropriation therefor, yet a liberal investment in office apparatus and convenience could be made with profitable results to the Department

As the incoming is to be composed largely of the retiring Board (there being only two new members) I will make a single suggestion regarding the future and I am done

For many years past it has been the aim of the Board to hold their fairs commencing on Monday of the third week of September. From the history of the past four years, would it not be well to consider the propriety, if not the actual necessity of a change in the time of holding our annual State Fair, which is the one positive assurance of the means requisite to the payment of premiums and running expenses?

Again, from the fact that we, as a nation, are once more conducting business on a specie basis, would it not be well for us to so shape the financial affairs of the department in the matter of premiums, gate fees, &c , &c , as to make them conform to this new order of things

CONCLUSION

And finally, gentlemen, during the four years that I have had the honor of presiding over your deliberations, while I have endeavored to do my whole duty, accompanied by as few mistakes as possible,—yet while they have often occurred, they have been borne by that silent and brotherly forbearance by the Board, that has ever distinguished its members, and rendered his association most pleasant and his duties the less irksome. And while with some degree of pride I review the work and count its labors, and not

unmingled with pleasure, the most kindly and thankful emotions arise for every gentleman composing the membership of the Board during the time. Yet, to our Secretary, who, after all, has borne the heat and and burthen of the day—constant, in season and out of season; to my own knowledge, often drawing heavily upon his sleeping hours, that the work of the Department might not languish or suffer, I wish here to record. that to his indomitable energy and unceasing devotion, more than to any one else, is to be credited the degree of success the Department has attained during the two terms that I have had the honor of representing the head

When he came into office, little was known of us, and that chiefly by the exchange of reports with similar bodies of other states; to-day, not only the states of the Union, but there is hardly a nation on the globe—civilized or semi-civilized—that is not acquainted with the existence of the Department of Agriculture of Illinois, and wherever it is profitable and possible, the office is in communication with and exchanging with them.

And while my every relation with the Board has been of the most pleasant character, in the various positions I have attempted to fill, during my long connection with it, yet none the less so has it been with our Secretary, whose labors have been instrumental in very largely increasing it.

Again I thank you, gentlemen, for the many acts of kindness and forbearance.

On motion of Mr. Judy,
The Board adjourned *sine die.*

D. B. GILLHAM.
President.

S. D. FISHER.
Secretary.

REPORTS FROM COUNTY AGRICULTURAL BOARDS.

The financial reports of the County Agricultural Boards, and other societies in this State holding fairs in 1878, are presented herewith.

The reports of the exhibitions in the various departments, and other matters usually published in connection with the reports are tabulated and follow the financial exhibits.

ADAMS COUNTY.

OFFICERS.—President W. T. Yeargain, Quincy; Vice Presidents Origin Wallace, Clayton; O. Collings, Liberty; Secretary S. D. Lewis, Payson; Treasurer, Geo. W. Dean, Adams.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report	.....	$213 11
Amount deficit, last report	.....	.....
Amount received 1878, fees, gate and entrance	.....	3,311 15
Amount received 1878, booth rents and permits	.....	491 75
Amount received 1878, sales shares of stock	.....	270 00
Amount received 1878, state appropriation	.....	100 00
Amount received 1878, other sources	.....	42 50
Amount paid 1878, in premiums	$2,214 00	.....
Amount paid 1878, for real estate, buildings etc	996 65	.....
Amount paid 1878, for current expenses other than premiums	1,102 54	.....
Amount remaining in treasury	115 32	.....
Amount deficit, including mortgage etc	.....	.....
Totals	$4,428 51	$4,428 51

BOONE COUNTY.

OFFICERS.—President, Richard Barnes, Belvidere; Vice-President, John Hannah, Belvidere; Secretary, A. E. Jenner, Belvidere; Treasurer, C. H. Peck, Belvidere.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report	.....	.....
Amount deficit last report	$92 09	.....
Amount received 1877, fees, gate and entrance	.....	$1,802 25
Amount receiven 1878, booth rents and premiums	.....	252 00
Amount received 1878, sale shares of stock	.....	10 00
Amount received 1878, state appropriation	.....	100 00
Amount received 1878, other sources	.....	169 62
Amount paid 1878, in premiums	1,147 75	.....
Amount paid 1878, for real estate, buildings etc	455 25	.....
Amount paid 1878, for current expenses other than premiums	594 72	.....
Amount remaining in treasury	44 06	.....
Amount deficit, including mortgage etc	.....	.....
Totals	$2,333 87	$2,333 87

BROWN COUNTY.

OFFICERS —President, W. H. Breckenridge, Versailles; Vice-President F. W. Rottger, Mt. Sterling; Secretary, John J. McDonald, Mt. Sterling; Treasurer, Richard P. Means, Mt Sterling.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last last report	$2,539 32	
Amount received 1878, fees—gate and entrance		$2,255 50
Amount received 1878 booth rents and permits		
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878 other sources		
Amount paid 1878, in permits	1,592 00	
Amount paid 1878, for real estate buildings, etc	607 34	
Amount paid 1878, for current expenses other than premiums	895 66	
Amount remaining in Treasury		
Amount deficit including mortgages, etc		3,078 82
Totals	$5,434 32	$5 434 32

BUREAU COUNTY.

OFFICERS —President Justus Stevens, Princeton; Secretary, C. P. Bascom, Princeton; Treasurer, S. G Paddock, Princeton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$349 91
Amount deficit, last report	$4,100 00	
Amount received 1878, fees, gate and entrance		3,483 37
Amount received 1878, both rent and permits		288 21
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	2,359 00	
Amount paid 1878 for real estate buildings, etc	367 31	
Amount paid 1878 for current expenses other than premiums	1,230 33	
Amount remaining in treasury	264 85	
Amount deficit, including mortgages		4,100 00
Total	$8,321 49	$8,321 49

CARROLL COUNTY.

OFFICERS.—President, Horatio C. Blake, Mt Carroll; Vice President, E L Byington, Lanark; Secretary, E. T. E Becker, Mt. Carroll; Treasurer, John S Grove, Mt. Carroll

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$1,653 55	
Amount received 1878 fees gate and entrance		$872 25
Amount received 1878 booth rents and permits		327 75
Amount received 1878, sale shares of stock .		356 00
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		.....
Amount paid 1878, in premiums	849 80	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	592 34	
Amount remaining in treasury		
Amount deficit including mortgages etc .		1,439 69
Totals	$3,095 69	$3,095 69

CASS COUNTY.

OFFICERS.—President, Morrison Graves, Virginia; Vice President, T. Jeff Crum, Virginia; Secretary, R. W. Rabourn, Virginia; Treasurer, S. H. Petefish, Virginia; Directors, O. Skiles, W. S. Vance, R. Stevenson, Virginia; C. E. Lippincott, Chandlerville; John Prunty, Ashland.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount in deficit, last report	$1,750 85	$2,120 35
Amount received 1878, fees, gate and entrance		2,120 35
Amount received 1878, booth, rents and permits		394 10
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		264 25
Amount paid 1878, in premiums	2,379 75	
Amount paid 1878, for real estate, buildings, etc	229 70	
Amount paid 1878, for current expenses other than premiums	907 65	
Amount remaining in treasury		
Amount deficit, including mortgages, etc		2,389 25
Totals	$5,267 95	$5,267 95

CHAMPAIGN COUNTY.

OFFICERS.—President, Daniel Gardner, Champaign; Treasurer, C. F. Columbia, Champaign; Secretary, H. J. Dunlap, Champaign.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$386 20
Amount deficit, last report	$9,875 00	
Amount received 1878, fees gate and entrance		1,706 20
Amount received 1878, booth rents and permits		406 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources, rent		50 00
Amount paid 1878, in premiums	472 59	
Amount paid 1878, for interest on loan	1,050 00	
Amount paid 1878, for current expenses other than premiums	804 61	
Amount remaining in treasury	37 00	
Amount deficit, including mortgage, etc		9,588 80
Totals	$12,237 20	$12,237 20

CHRISTIAN COUNTY.

OFFICERS.—President, W. A. Perkins, Taylorville; Vice President, John Sharp, Sharpsburg; Secretary, W. A. Goodrich, Taylorville; Treasurer, A. G. Barnes, Taylorville; Directors, J. W. Hunter, Owaneco; J. M. Simpson, Palmer; J. A. Hill, J. B. Ricks, W. H. Sharp, Taylorville.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$2,158 60	
Amount received 1878, fees—gate and entrance		$923 07
Amount received 1878, booth rents and permits		
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	1,124 00	
Amount paid 1878, for real estate, buildings, etc.		
Amount paid 1878, for current expenses other than premiums	240 47	
Amount remaining in treasury		
Amount deficit including mortgage, etc		2,500 00
Totals	$3,523 07	$3,523 07

CLARK COUNTY.

OFFICERS.—President, George A. Hippard, Marshall; Secretary, Walter Bartlett, Marshall; Treasurer, Clarence Bryan, Marshall; General Superintendent, John R. Archer, Marshall.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$11 00	
Amount received 1878, fees-gate and entrance		$865 00
Amount received 1878, booth rents and permits		150 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	780 00	
Amount paid 1878, for real estate, buildings, etc	280 00	
Amount paid 1878, for current expenses other than premiums		
Amount remaining in treasury	44 00	
Amount deficit, including mortgage, etc		
Totals	$1,115 00	$1,115 00

CLAY COUNTY.

OFFICERS.—President, Geo. W. Sturdivant, Louisville; Vice Presidents, Crawford Erwin, Hoosier S. Neely, Flora; Secretary, Ben. Hagle, Louisville; Treasurer, Jas. C. McAllum, Louisville; Directors, Dora McNelly, W. H. Davis, Louisville; Cameron McKnight, Ingraham.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$161 00	
Amount received 1878, fees-gate and entrance		$276 50
Amount received 1878, booth rents and permits		48 00
Amount received 1878, sale shares of stock		5 00
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	368 90	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	42 20	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		142 60
Totals	$572 10	$572 10

COLES COUNTY.

OFFICERS.—President, S. D. Dole, Mattoon; Vice Presidents, M. B. Valodin, Oakland; T. G. Chambers, I. J. Monfort, Charleston; James Shoemaker, Loxa; Secretary, R. S. Hodgen, Charleston; Treasurer, J. K. Decker, Charleston; Directors, W. R. Patton, C. E. Wilson, S. B. Cheeseman, Charleston; S. Vanmeter, Loxa; E. R. Conely, Westfield.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$5 20
Amount deficit, last report	$1,475 00	
Amount received 1878, fees—gate and entrance		1,802 18
Amount received 1878, booth rents and permits		235 35
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		165 00
Amount paid 1878, in premiums	1,682 50	
Amount paid 1878, for real estate, building, etc	118 15	
Amount paid 1878, for current expenses other than premiums	644 26	
Amount remaining in treasury	10 32	
Amount deficit, including mortgage, etc		1,622 50
Totals	$3,930 23	$3,930 23

CRAWFORD COUNTY.

OFFICERS.—President, P. P. Connett, Hebron; Vice President, W. A. Cope, Morea; M. Caywood, Oblong; A. C. Burner, Eaton; Treasurer, W. Parker, Robinson; Secretary, W. Swaren, Robinson.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$175 45	
Amount received 1878, fees—gate and entrance		$1,268 80
Amount received 1878, booth rents and permits		325 55
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	872 00	
Amount paid 1878, for real estate, buildings, etc	396 44	
Amount paid 1878, for current expenses other than premiums	125 00	
Amount remaining in treasury	125 46	
Amount deficit including mortgage, etc		
Totals	$1,694 35	$1,694 35

CUMBERLAND COUNTY.

OFFICERS.—President, Harlo Park, Greenup; Secretary. Wm. Logan, Majority Point; Treasurer, M. B. Ross, Majority Point; Directors, W. N. Berry, John VanDyke, Majority Point; D. Neal, Neogo; John Green, Greenup; Sam. Yanaway, Union Center.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$1,822 43	
Amount recieved 1878, fees - gate and entrance		$905 10
Amount recieved 1878, booth rents and permits		
Amount recieved 1878, sale shares of stock		
Amount recieved 1878, state appropriations		100 00
Amount recieved 1878, other sources		
Amount paid 1878, in premiums	712 00	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses, other than premiums	200 00	
Amount remaining in treasury	96 00	
Amount deficit, including mortgage etc		1,785 33
Totals	$2,790 43	$2790 43

DEKALB COUNTY.—Sycamore branch.

OFFICERS.—President, L. D. Evans, Sycamore; Vice President, R. J. Holcomb, Sycamore; Secretary, B. F. Wyman, Sycamore; Treasurer, H. Holcomb, Sycamore; Directors, A. Ellwood, O. F. Holcomb, E. C. West, J. Liglim, H. Mackey, Sycamore.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$200 00	
Amount received 1878, fees—gate and entrance		$1,100 00
Amount received 1878, booth rents and permits.		164 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		
Amount paid 1878, in premiums	785 00	
Amount paid 1878, for real estate, buildings, etc	185 00	
Amount paid 1878, for current expenses other than premiums	415 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		320 50
Totals	$1,585 00	$1,585 00

DeKALB COUNTY.—DeKalb branch.

Officers.—President, L. M. McEwen, DeKalb; Vice President, T. Smith, Creston; Secretary, S. O. Vaughn, DeKalb; Treasurer, L. H. Post, DeKalb.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$650 00	
Amount received, 1878, fees—gate and entrance		$720 00
Amount received 1878, booth rents and permits		284 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		
Amount paid 1878, in premiums	637 00	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	367 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		650 00
Totals	$1,654 00	$1,654 00

DeWITT COUNTY.

Officers.—President, James A. Wilson, Clinton; Vice Presidents, J. W. Funk, Heyworth, Geo. Armstrong, Clinton; Secretary, Lewis Campbell, Clinton; Treasurer, Edwin Weld, Clinton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$138 05
Amount deficit, last report	$1,361 95	
Amount received 1878, fees, gate and entrance.		1,068 31
Amount received 1878, booth rents and permits		688 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		55 00
Amount paid 1878, in premiums	816 20	
Amount paid 1878, for real estate, buildings, etc	398 35	
Amount paid 1878, for current expenses other than premiums	634 46	
Amount remaining in treasury	44 45	
Amount deficit, including mortgage, etc		1,205 55
Totals	$3,255 41	$3,255 41

DOUGLAS COUNTY.

Officers.—President, John T. Irwin, Camargo; Vice President, Wm. Howe, Tuscola; Secretary, F. M. Friend, Tuscola; Treasurer, W. R. Johnson, Tuscola; Directors, Rice Erwin, P. L. Dawson, O. J. Jones, Thos. Brian, Tuscola; Lewis Moore, E. C. Murphy, Brushy Fork; S. Waddell, I. W. Burgitt, J. D. Murdock, Murdock.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$25 40
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		877 16
Amount received 1878, booth-rents and permits		262 85
Amount received 1878, sale shares of stock		25 00
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$304 00	
Amount paid 1878, for real estate, buildings, etc	772 00	
Amount paid 1878, for current expenses other than premiums	210 00	
Amount remaining in treasury	4 41	
Amount deficit, including mortgage, etc		
Totals	$1,290 41	$1,290 41

DuPAGE COUNTY.

OFFICERS.—President, H. L. Bush, Dower's Grove; Secretary, A. S. Landon, Wheaton; Treasurer, H. W. Grote, Wheaton.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$15 63
Amount deficit, last report	$277 64	
Amount received 1878, fees—gate and entrance		802 25
Amount received 1878, booth rents and permits		96 40
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		131 45
Amount paid 1878, in premiums	975 25	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878 for current expenses other than premiums	270 76	
Amount remaining in treasury	7 08	
Amount deficit, including mortgage, etc		385 00
Totals	$1,530 73	$1,520 73

EDGAR COUNTY.

OFFICERS.—President, Wm. O. Wilson, Paris; Vice Presidents, J. I. Blackburn, Wm. Blackburn, Samuel Graham, F. R. Augustus, A. G. Walker, Paris; W. O. Parrish, Kansas; Secretary, Walter Booth, Paris; Treasurer, J. N. Parrish, Paris.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$1,133 88
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		3,225 00
Amount received 1878, booth rents and permits		403 45
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$2,523 50	
Amount paid 1878, for real estate, buildings, etc	673 57	
Amount paid 1878, for current expenses other than premiums	708 26	
Amount remaining in treasury	957 00	
Amount deficit, including mortgage, etc		
Totals	$4,862 33	$4,862 33

EDWARDS COUNTY.

OFFICERS.—President, Joseph White, Albion; Vice President, H. C. Porter, Albion; Secretary, M. Emmerson, Albion; Treasurer, W. B. Tribe, Albion; Directors, John Walker, Charles Clark, W. T. Bulkley, John Curtis, D. W. Graham, Joseph Dixon, Albion.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$186 47
Amount deficit, last report		
Amount received 1878 fees—gate and entrance		1,790 60
Amount received 1878, booth rents and permits		125 00
Amount received 1878, sale shares of stock		
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		111 03
Amount paid 1878, in premiums	$1,275 25	
Amount paid 1878, for real estate, buildings, etc	112 01	
Amount paid 1878, for current expenses other than premiums	581 88	
Amount remaining in treasury	343 96	
Amount deficit, including mortgage, etc		
Totals	$2,313 10	$2,313 10

FAYETTE COUNTY.

OFFICERS.—President, James E. Foster, Brownstown; Henry F. Jerauld, George Deckmann, Vice Presidents; D. M. Clark, Secretary; Fred. Remann, Treasurer.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report	$313 40	
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		$865 00
Amount received 1878, booth rents and permits		257 25
Amount received 1878, sale shares of stock		66 00
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		1 15
Amount paid 1878, in premiums	741 75	
Amount paid 1878, for real estate, buildings, etc	21 91	
Amount paid 1878, for current expenses other than premiums	416 25	
Amount remaining in treasury	1 00	
Amount deficit, including mortgage, etc		205 00
Totals	$1,494 40	$1,494 40

FORD COUNTY.

OFFICERS.—President, A. Croft, Paxton; Vice President, H. J. Scheffer, Paxton; Secretary, G. W. Cruzen, Paxton; Executive Committee, John P. Day, J. B. Loose, Stacy Daniels, R. Cruzen, Daniel Moudy, Geo. Arnott, W. E. Sawyer, C. V. Meharey, Jno. Bodly, Paxton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		$625 00
Amount received 1878, booth rents and permits		75 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		130 00
Amount paid 1878, in premiums	700 00	
Amount paid 1878, for real estate, buildings, etc	150 00	
Amount paid 1878, for current expenses other than premiums	80 00	
Amount remaining in treasury		
Amount deficit including mortgage, etc		
Totals	$930 00	$930 00

FRANKLIN COUNTY.

OFFICERS.—President, Jeremiah Neal, Benton; Vice President, John R. Jones, Benton; Secretary, Wm. C. Phipps, Benton; Treasurer, A. D. Jackson, Benton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$85 75
Amount deficit, last report		
Amount received 1878, fees-gate and entrance		1,190 40
Amount received 1878, booth rents and permits		237 25
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$747 00	
Amount paid 1878, for real estate, buildings, etc	337 79	
Amount paid 1878, for current expenses other than premiums	277 35	
Amount remaining in treasury	251 26	
Amount deficit including mortgage, etc		
Totals	$1,613 40	$1,613 40

FULTON COUNTY.—Canton.

OFFICERS.—President, Inman Blackabee; Vice President, John Prickett, Lewiston; Secretary, C. D. Hoblitt; Directors, Leander Cassady, Vermont; H. S. Bryant, Lewiston; Frank Putnam, Civer; A. Robb, Farmington; D. F. Emery, S. S. Miller, John Fisher, Canton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$13 10
Amount deficit, last report	[illegible]	
Amount received 1878, fees—gate and entrance		1,807 50
Amount received 1878, booth rents and permits		418 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		197 2[illegible]
Amount paid 1878, in premiums	941 66	
Amount paid 1878, for real estate, buildings, etc	109 02	
Amount paid 1878, for current expenses other than premiums	1,[illegible]65 12	
Amount remaining in treasury	49 76	
Amount deficit, including mortgage, etc		230 00
Totals	$2,665 86	$2,665 86

FULTON COUNTY.—Avon.

OFFICERS.—President, D. H Gorham; Vice Presidents, J. B. Hatch, L. M Green, O Cattertson, S. Tomkins, Avon; A J. Churchill, Secretary, Avon; Directors, F M Nance, O. Crissey, L S Woods, J. Ferrings, A. T. Richardson, W M. H Rose, Avon; Enoch Hawkins, Hermon; J. J. Serven, and James Kutchler, Prairie City.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		2,546 81
Amount received 1878, booth rents and permits		238 38
Amount received 1878, sale shares of stock		25 00
Amount received 1878, state appropriation		
Amount received 1878 other sources		657 46
Amount paid 1878, in premiums	$1,938 00	
Amount paid 1878, for real estate, buildings etc	995 81	
Amount paid 1878, for current expenses other than premiums	1,015 00	
Amount remaining in treasury	60 97	
Amount deficit including mortgage, etc		
Totals	$4 009 78	$4,009 78

GALLATIN COUNTY.

OFFICERS.—President, M. M. Pool, Shawneetown; Vice President, C. W. McGehee, Shawneetown; Secretary, John L. Robinson, Shawneetown; Treasurer, John D. Richeson, Shawneetown.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$556 57
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		2,428 70
Amount received 1878, booth rents and permits		239 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$1,961 25	
Amount paid 1878, for real estate, buildings, etc	719 15	
Amount paid 1878, for current expenses other than premiums	556 57	
Amount remaining in treasury	87 80	
Amount deficit, including mortgage, etc		
Totals	$3,324 77	$3,324 77

GREEN COUNTY.

OFFICERS.—President, George W. Davis, Carrollton; Vice President, C. S. McCollister, White Hall; Secretary, N. J. Andrews, Carrollton; Treasurer, J. E. Brace, Carrollton.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$196 37
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		3,093 75
Amount received 1878, booth rents and permits		411 25
Amount received 1878, sale shares of stock		40 00
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		2,125 09
Amount paid 1878, in premiums	$1,781 50	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	3,589 54	
Amount remaining in treasury	595 33	
Amount deficit including mortgage, etc		
Totals	$5,966 37	$5,966 37

GRUNDY COUNTY.

OFFICERS.—President, W. T. Hopkins, Morris; Vice Presidents, Geo. W. Booth, Gardner; Henry Gorham, Morris; William Weere, Platteville; Secretary, E. B. Fletcher, Morris; Treasurer, Samuel Tupper, Morris.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$227 50	
Amount received 1878, fees—gate and entrance		$2,022 18
Amount received 1878, booth rents and permits		140 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		275 85
Amount paid 1878, in premiums	1,657 30	
Amount paid 1878, for real estate, buildings, etc	954 27	
Amount paid 1878, for current expenses other than premiums	813 31	
Amount remaining in treasury	23 95	
Amount deficit, including mortgage, etc		1,138 30
Totals	$3,676 33	$3,676 33

HARDIN COUNTY.

OFFICERS.—President, C. M. Ferrell, Elizabethtown; Vice President, J. B. Miller, Sr., Elizabethtown; Corresponding Secretary, L. F. Twitchell, Elizabethtown; Recording Secretary, J. A. Lowery, Elizabethtown; Treasurer, T. A. McAmis, Elizabethtown.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$2 00
Amount deficit, last report	$250 00	
Amount received 1878, fees gate and entrance		882 93
Amount received 1878, booth rents and permits		250 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	811 90	
Amount paid 1878, for real estate, buildings, etc	96 60	
Amount paid 1878, for current expenses other than premiums	315 86	
Amount remaining in treasury	10 57	
Amount deficit, including mortgage, etc		250 00
Totals	$1,484 93	$1,484 93

HENDERSON COUNTY.

OFFICERS.—President, Samuel Hutchinson, Kirkwood; Vice President, H. M. Whiteman, Biggsville; Cor. Secretary, G. W. Holmes, Biggsville; Recording Secretary, R. A. McKinley, Biggsville; Treasurer, Geo. McDill; Executive Committee, J. H. McDougall, W. M. Graham, R. Gibson, Biggsville; W. N. Ives, Oquawka; Peter Groom, Raritan; P. D. Salter, Kirkwood; T. G. Richey, Olena.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$75 25
Amount deficit, last report	$300 00	
Amount received 1878, fees gate and entrance		1,194 85
Amount received 1878, booth rents and permits		257 35
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	1,256 75	
Amount paid 1878, for real estate, buildings, etc	125 00	
Amount paid 1878, for current expenses other than premiums	275 70	
Amount remaining in treasury		
Amount deficit including mortgage, etc		330 00
Totals	$1,957 45	$1,957 45

HENRY COUNTY.

OFFICERS.—President, H. C. Gilbert, Geneseo; A. A. Crane, Vice President, Osco; R. H. Hiennan, Secretary, Cambridge; W. H. Shepard, Treasurer, Cambridge.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$3,100 00	
Amount received 1878, fees—gate and entrance		$4,245 35
Amount received 1878 booth rents and permits		944 30
Amount received 1878, sale shares of stock		
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		607 71
Amount paid 1878, in premiums	2,912 00	
Amount paid 1878, for real estate, buildings, etc	651 44	
Amount paid 1878, for current expenses other than premiums	1,424 31	
Amount remaining in treasury	272 61	
Amount deficit, including mortgage, etc		2,263 00
Totals	$8,160 36	$8,160 36

IROQUOIS COUNTY.—Onarga.

OFFICERS.—President, Wm. A. Boswell, Onarga; Vice Presidents, H. Pinney, Onarga, A. J. Alexander, Gilman; Jonas S. Pusey, Buckley; Secretary, E. C. Hall, Onarga; Treasurer, C. C. Sedgwick, Onarga.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$1,700 00	
Amount received 1878, fees—gate and entrance		$949 08
Amount received 1878, booth rents and permits		310 69
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation.		100 00
Amount received 1878, other sources		143 91
Amount paid 1878, in premiums	476 40	
Amount paid 1878 for real estate, buildings, etc	576 54	
Amount paid 1878, for current expenses other than premiums	677 28	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		1,926 54
Totals	$3,430 22	$3,430 22

JACKSON COUNTY.

OFFICERS.—President, R. A. Beasley, Desoto; Secretary, F. B. Hawks, Murphysboro; Jeff Jenkins, Treasurer, Murphysboro; Directors, B. F. Will, O. J. Sevan, Jeff Jenkins, Murphysboro; R. A. Beasley, Desoto; F. B. Hanks, Murphysboro.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$165 00	
Amount received 1878, fees—gate and entrance		$623 00
Amount received 1878, booth rents and permits		95 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	660 85	
Amount paid 1878, for real estate, buildings, etc	85 05	
Amount paid 1878, for current expenses other than premiums	98 40	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		191 30
Totals	$1,009 30	$1,009 30

JASPER COUNTY.

OFFICERS—President, John Mason, Newton; Vice President, Samuel Bowman, Hunt City; Secretary, Geo. H. Myers, Newton; Treasurer, John Winterond, Newton; Trustees, Jno. A. Merrick, Willow Hill; D. E. Robuch, Newton; Grandison Clark, Newton.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report		
Amount received 1878, fees gate and entrance		$880 25
Amount received 1878, booth rents and permits		167 75
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		42 00
Amount paid 1878, in premiums	$1,000 00	
Amount paid 1878, for real estate, buildings, etc	700 00	
Amount paid 1878 for current expenses other than premiums	178 50	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		688 50
Totals	$1,878 50	$1,878 50

JEFFERSON COUNTY.

OFFICERS.—President, Samuel Gibson, Mt. Vernon; Vice President, J. R. Moss, Mt. Vernon; Recording Secretary, G. M. Haynes, Mt. Vernon; Corresponding Secretary, Jno. S. Bogan, Mt. Vernon; Treasurer, A. F. Taylor, Mt. Vernon.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$244 15
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,934 38
Amount received 1878, booth rents and permits		
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$1,335 00	
Amount paid 1878, for real estate, buildings, etc	152 75	
Amount paid 1878, for current expenses other than premiums	389 46	
Amount remaining in treasury	401 32	
Amount deficit, including mortgage, etc		
Totals	$2,278 53	$2,278 53

JERSEY COUNTY.

OFFICERS.—President, Henry Ryan, Mendora; Vice President, Henry S. Ross, Jerseyville; Secretary, Morris R. Locke, Jerseyville; Treasurer, John A. Shephard; Grand Marshal, David E. Beatty.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$226 67
Amount deficit, last report		
Amount received 1878, fees-gate and entrance		5 284 50
Amount received 1878, booth rents and permits,		1,422 95
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		594 30
Amount paid 1878, in premiums	$4 281 00	
Amount paid 1878, for real estate buildings, etc	650 00	
Amount paid 1878, for current expenses other than premiums	2,520 69	
Amount remaining in treasury	176 73	
Amount deficit, including mortgage, etc		
Totals	$7,628 42	$7,628 42

JoDAVIESS COUNTY.—Galena branch.

OFFICERS.—President, Ralph S. Norris; Vice President, Henry B. Cheltain; Secretary, Frank Bostwick; Treasurer, David N. Corinth; Directors, Edgar M. Bouton, Fredrick Cheltain, W. Vincent, Morris Annets, Galena; Chas. Speer, Hanover.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$1,117 85	
Amount received 1878, fees gate and entrance		$1,336 85
Amount received 1878, booth rents and permits.		369 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		50 00
Amount received 1878, other sources		54 45
Amount paid 1878, in premiums	1,173 45	
Amount paid 1878, for real estate, buildings, etc	386 60	
Amount paid 1878, for current expenses other than premiums	727 16	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		1,594 76
Totals	$3,405 06	$3,405 06

JoDAVIESS COUNTY.—Warren branch.

OFFICERS.—President, Robert Hawley, Warren; Vice President, Wm. Young, Lena; Secretary, Joseph Hicks, Warren; Treasurer, W. L. Gale, Warren; Directors. M. Lynch, G. W. Pepoon, A. C. Schadle, Warren.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$19 98
Amount deficit, last report	$1,721 05	
Amount received 1878, fees—gate and entrance		1,278 65
Amount received 1878, booth rents and permits		166 50
Amount received 1878, sale shares of stock		793 65
Amount received 1878, state appropriation		50 00
Amount received 1878, other sources		6 54
Amount paid 1878, in premiums	854 00	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	559 44	
Amount remaining in treasury	10 00	
Amount deficit, including mortgage, etc		829 17
Totals	$3,144 49	$3,144 49

KANE COUNTY.

OFFICERS.—President, Jonathan Tefft, South Elgin; Vice President, E. W. Thompson, Sugar Grove; Secretary, W. H. Pease, Geneva; Treasurer, S. W. Curtis, Geneva.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit last report	$292 00	
Amount received 1878, fees—gate and entrance		$1,380 70
Amount received 1878, booth rents and permits		
Amount received 1878, sale shares of stock		
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	9 5 40	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	495 30	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		292 00
Totals	$1,772 70	$1,772 70

KANKAKEE COUNTY.

OFFICERS.—President, Emory Cobb, Kankakee; Vice President, Fayette Peck, Kankakee; Secretary, Noel Brosseau, Kankakee; Treasurer, Walter W. Todd, Kankakee.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$138 86
Amount deficit, last report	$1,685 50	
Amount received 1878, fees—gate and entrance		1,628 00
Amount received 1878, booth rents and permits		137 75
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		108 00
Amount paid 1878, in premiums	1,011 60	
Amount paid 1878, for real estate, buildings, etc	126 00	
Amount paid 1878, for current expenses other than premiums	975 54	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.		1,685 83
Totals	$3,798 64	$3,798 64

KENDALL COUNTY.

OFFICERS.—President, Wm. T. Henning, Plano; Vice Presidents, John S. Seely, Oswego; J. W. House, Minooka; Secretary, J. M. Gale, Bristol; Treasurer, J. B. Chottle, Oswego,

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$94 75	
Amount received 1878, fees—gate and entrance		$638 40
Amount received 1878, booth rents and permits		125 00
Amount received 1878, sale shares stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		45 00
Amount paid 1878, in premiums	514 20	
Amount paid 1878, for real estate, buildings, etc	9 45	
Amount paid 1878, for current expenses other than premiums	290 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.		
Totals	$908 40	$908 40

KNOX COUNTY.

OFFICERS —President, J. H Lewis, Knoxville; Vice President, S F. Flint, Galesburg, Secretary, I L Rynearson, Knoxville, Treasurer, G. G. Stearns, Knoxville, Executive Committee, D M Eiker, F M Doolittle, John Bond, Alex Donason, J H Sumner, J V N Standish, J F Hubble, M L Overstreet

FINANCIAL EXHIBIT FOR 1878

Amount in treasury last report		$37 00
Amount deficit last report		
Amount received 1878 fees—gate and entrance		2,475 25
Amount received 1878, booth rents and permits		301 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		100 00
Amount paid 1878 in premiums	$2 300 00	
Amount paid 1878 for real estate, buildings etc	125 00	
Amount paid 1878, for current expenses other than premiums	947 50	
Amount remaining in treasury		
Amount deficit including mortgage etc		359 25
Totals	$3 372 50	$3,372 59

LAKE COUNTY

OFFICERS —President R H French, Libertyville; Secretary, S I Bradbury, Waukegan, Treasurer, E W Parkhurst, Libertyville

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$1 37
Amount deficit last report		
Amount received 1878, fees gate and entrance		427 00
Amount received 1878 booth rents and permits		28 00
Amount received 1878 sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878 other sources		2 93
Amount paid 1878 in premiums	$[illegible]8 95	
Amount paid 1878 for real estate buildings, etc		
Amount paid 1878 for current expenses other than premiums	218 97	
Amount remaining in treasury	11 38	
Amount deficit including mortgage etc		
Totals	$559 30	$559 30

LASALLE COUNTY

OFFICERS —President, Charles H Green, Ottawa; Vice President, E C Lewis, Deer Park, J R Shaver, D J Price, Ottawa, Secretary, A M Hoffman, Ottawa, Treasurer, L H Eames, Ottawa

FINANCIAL EXHIBIT FOR 1878

Amount in treasury last report		$1 140 98
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		3 855 65
Amount received 1878, booth rents and permits		446 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878 other sources		
Amount paid 1878, in premiums	$2 689 50	
Amount paid 1878, for real estate, building, etc		
Amount paid 1878, for current expenses other than premiums	1,997 92	
Amount remaining in treasury	855 21	
Amount including mortgage etc		
Totals	$5,542 63	$5,542 63

KANE COUNTY.

OFFICERS.—President, Jonathan Tefft, South Elgin; Vice President, E. W. Thompson, Sugar Grove; Secretary, W. H. Pease, Geneva; Treasurer, S. W. Curtis, Geneva.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit last report	$292 00	
Amount received 1878, fees—gate and entrance		$1,380 70
Amount received 1878, booth rents and permits		
Amount received 1878, sale shares of stock		
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	9 5 40	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	495 30	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		292 00
Totals	$1,772 70	$1,772 70

KANKAKEE COUNTY.

OFFICERS.—President, Emory Cobb, Kankakee; Vice President, Fayette Peck, Kankakee; Secretary, Noel Brosseau, Kankakee; Treasurer, Walter W. Todd, Kankakee.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$138 86
Amount deficit, last report	$1,685 50	
Amount received 1878, fees—gate and entrance		1,628 00
Amount received 1878, booth rents and permits		137 75
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		108 00
Amount paid 1878, in premiums	1,011 60	
Amount paid 1878, for real estate, buildings, etc	126 00	
Amount paid 1878, for current expenses other than premiums	975 54	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.		1,685 83
Totals	$3,798 64	$3,798 64

KENDALL COUNTY.

OFFICERS.—President, Wm. T. Henning, Plano; Vice Presidents, John S. Seely, Oswego; J. W. House, Minooka; Secretary, J. M. Gale, Bristol; Treasurer, J. B. Chottle, Oswego,

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$94 75	
Amount received 1878, fees—gate and entrance		$638 40
Amount received 1878, booth rents and permits		125 00
Amount received 1878, sale shares stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		45 00
Amount paid 1878, in premiums	514 20	
Amount paid 1878, for real estate, buildings, etc	9 45	
Amount paid 1878, for current expenses other than premiums	290 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.		
Totals	$908 40	$908 40

KNOX COUNTY.

OFFICERS.—President, J. H. Lewis, Knoxville; Vice President, S. F. Flint, Galesburg; Secretary, J. L Rynearson, Knoxville; Treasurer, G. G. Stearns, Knoxville; Executive Committee, D M Elker, F. M. Doolittle, John Bond, Alex. Donason, J. H. Sumner, J V N Standish, J. F. Hubble, M. L Overstreet.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$37 00
Amount deficit, last report		
Amount received 1878 fees—gate and entrance		2,475 25
Amount received 1878, booth rents and permits		301 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		100 00
Amount paid 1878 in premiums	$2,300 00	
Amount paid 1878 for real estate, buildings etc	125 00	
Amount paid 1878, for current expenses other than premiums	947 50	
Amount remaining in treasury		
Amount deficit including mortgage, etc		359 25
Totals	$3,372 50	$3,372 50

LAKE COUNTY.

OFFICERS —President. R H. French, Libertyville; Secretary, S. I. Bradbury, Waukegan; Treasurer, E W. Parkhurst, Libertyville.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$1 37
Amount deficit, last report		
Amount received 1878, fees gate and entrance		427 00
Amount received 1878, booth rents and permits		28 00
Amount received 1878 sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		2 93
Amount paid 1878, in premiums	$ 08 95	
Amount paid 1878, for real estate buildings, etc		
Amount paid 1878, for current expenses other than premiums	218 97	
Amount remaining in treasury	11 38	
Amount deficit including mortgage etc		
Totals	$559 30	$559 30

LASALLE COUNTY.

OFFICERS.—President, Charles H. Green, Ottawa; Vice President, E. C. Lewis, Deer Park; J. R. Shaver, D J Price, Ottawa; Secretary, A. M. Hoffman, Ottawa; Treasurer, L H. Eames, Ottawa.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$1,140 98
Amount deficit, last report		
Amount received 1878, fees -gate and entrance		3 855 65
Amount received 1878, booth rents and permits		446 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$2 689 50	
Amount paid 1878, for real estate, building, etc		
Amount paid 1878, for current expenses other than premiums	1,997 92	
Amount remaining in treasury	855 21	
Amount including mortgage, etc		
Totals	$5,542 63	$5,542 63

LAWRENCE COUNTY.

OFFICERS.—President, J. W. Whittaker, Lawrenceville; Vice President, Philip Snyder, Lawrenceville; Secretary, D. L. Gold, Lawrenceville; Treasurer, E. Schmalhausen, Lawrenceville; General Superintendent, W. T. Buchan, Bridgeport.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$600 00	
Amount received 1878, fees--gate and entrance		445 00
Amount received 1878, booth rents and permits		170 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		73 00
Amount paid 1878, in premiums	463 00	
Amount paid 1878, for real estate, buildings, etc	20 00	
Amount paid 1878, for current expenses other than premiums	195 00	
Amount remaining in treasury	110 00	
Amount deficit including mortgage, etc		600 00
Totals	$1,388 00	$1,388 00

LIVINGSTON COUNTY.

OFFICERS.—President, John Virgin, Fairbury; Vice President, J. R. Strawn, Chatsworth; Secretary, H. L. Bruce, Fairbury; Treasurer, C. C. Bartlett, Fairbury.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$420 89
Amount deficit last report	$1,929 18	
Amount received 1878, fees—gate and entrance		3,434 50
Amount received 1878, booth rents and permits		672 20
Amount received 1878, sale shares of stock		140 03
Amount received 1878 state appropriation		
Amount received 1878 other sources		15 60
Amount paid 1878, in premiums	2,647 90	
Amount paid 1878, for real estate, buildings, etc	690 75	
Amount paid 1878, for current expenses other than premiums	919 16	
Amount remaining in treasury	3 24	
Amount deficit, including mortgage, etc.		1,507 01
Totals	$6,190 23	$6,190 23

LOGAN COUNTY.—Lincoln branch.

OFFICERS.—President, Joseph Ream, Lincoln; Vice President, J. A. Crichfield, Broadwell; Secretary, A. B. Nicholson, Lincoln; Treasurer, H. L. Pierce, Lincoln.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$1,196 00	
Amount received 1878, fees—gate and entrance		$4,470 20
Amount received 1878, booth rents and permits.		348 35
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		50 00
Amount received 1878, other sources		576 30
Amount paid 1878, in premiums.	3,814 50	
Amount paid 1878, for real estate, buildings, etc	150 00	
Amount paid 1878, for current expenses other than premiums	1,019 27	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		734 92
Totals	$6,179 77	$6,179 77

LOGAN COUNTY.—Atlanta branch.

OFFICERS.—President, John H. Bell, Atlanta; Secretary, C. L. Downey, Atlanta; Treasurer, Frank Hoblit, Atlanta; Directors, Sylvester Hoblit, J. Q. McKinnon, Andrew Turner, Atlanta; Ed. Stubblefield, McLean; H. C. Mountjoy, Armington.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$17 38
Amount deficit, last report	$1,603 33	
Amount received 1878, fees—gate and entrance		2,013 60
Amount received 1878, booth rents and permits		690 52
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		50 00
Amount received 1878, other sources		196 00
Amount paid 1878, in premiums	1,968 75	
Amount paid 1878, for real estate, buildings, etc	527 48	
Amount paid 1878, for current expenses other than premiums	709 53	
Amount remaining in treasury	11 84	
Amount deficit, including mortgage, etc		1,853 43
Totals	$4,820 93	$4,820 93

MACON COUNTY.

OFFICERS.—President, J. H. Pickrell, Harristown; Vice President, Volney Barber, Decatur; Secretary, M. B. Thomas, Decatur; Treasurer, J. H. Miller, Decatur.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$6 45
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		2,100 00
Amount received 1878, booth rents and permits		143 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		334 00
Amount paid 1878, in premiums	$1,140 70	
Amount paid 1878, for real estate, buildings, etc	600 00	
Amount paid 1878, for current expenses other than premiums	310 00	
Amount remaining in treasury	32 75	
Amount deficit, including mortgage, etc		
Totals	$2,683 45	$2,683 45

MACOUPIN COUNTY.

OFFICERS.—President, D. Gove, Vice President, John Carr, Carlinville; Secretary, George Fishback, Carlinville; Treasurer, J. K. Furber, Carlinville.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$107 00
Amount deficit, last report	$7,000 00	
Amount received 1878, fees—gate and entrance		3,729 00
Amount received 1878, booth rents and permits		290 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		260 00
Amount paid 1878, in premiums	2,833 50	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	1,778 00	
Amount remaining in treasury		
Amount deficit including mortgage, etc		7,125 00
Totals	$11,611 50	$11,611 50

MARION COUNTY.—Centralia.

OFFICERS.—President, M. C. Kell, Centralia; Vice President, J. L. Johnson, Centralia; Secretary, J. N. Kerr, Centralia; Treasurer, F. Kohl, Centralia.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$104 50
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,794 60
Amount received 1878, booth rents and permits		537 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		73 40
Amount paid 1878, in premiums	$1,425 25	
Amount paid 1878, for real estate, buildings, etc	22 39	
Amount paid 1878, for current expenses other than premiums	663 94	
Amount remaining in treasury	397 92	
Amount deficit, including mortgage, etc		
Totals	$2,509 50	$2,509 50

MARSHALL COUNTY.—Wenona.

OFFICERS.—President, John O. Dent, Wenona; Vice President, W. H. H. Holdridge, Tonica; Recording Secretary, Geo. G. McAdam, Wenona; Corresponding Secretary, A. H. Stateler, Wenona; Treasurer, J. T. Ralston.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury last report, last report		$1,060 38
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		5,244 30
Amount received 1878, booth rents and permits		380 00
Amount received 1878, sale shares of stock		267 45
Amount received 1878, state appropriation		
Amount received 1878, other sources		774 76
Amount paid 1878, in premiums	$3,861 00	
Amount paid 1878, for real estate, buildings, etc	1,235 85	
Amount paid 1878, for current expenses, other than premiums	1,842 49	
Amount remaining in treasury	787 55	
Amount deficit, including mortgage, &c.		
Totals	$7,726 89	$7,726 89

MASON COUNTY.

OFFICERS.—President, Samuel Bivens, Havana; Secretary, Samuel F. Kyle, Havana; Treasurer, Thos. Covington, Havana; Superintendent, W. H. Webb, Havana; Directors, F. Low, Wm. M. Ganson, W. S. Dray, Henry Borgelt, T. J. Lucas, M. Rogers, Havana.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$50 09
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,169 50
Amount received 1878, booth rents and permits		517 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$1,281 00	
Amount paid 1878, for real estate, buildings, etc.	67 50	
Amount paid 1878, for current expenses other than premiums	418 43	
Amount remaining in treasury	69 66	
Amount deficit, including mortgage, etc		
Totals	$1,836 59	$1,836 59

MASSAC COUNTY.

OFFICERS.—President, J. C. Willis, Metropolis; Vice President, Owen Bruner, Metropolis; Secretary, James M. Stone, Metropolis; Treasurer, A. D. Davis.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$236 45
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		685 15
Amount received 1878, booth rents and permits		267 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		169 55
Amount paid 1878, in premiums	$478 00	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	523 72	
Amount remaining in treasury	456 93	
Amount deficit, including mortgage, etc		
Totals	$1,458 65	$1,458 65

McDONOUGH COUNTY.

OFFICERS.—President, W. O. Blaisdell, Macomb; Vice President, Milton Knight, Macomb; Secretary, W. H. Hainline, Macomb; Treasurer, I. N. Pearson, Macomb.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$129 41
Amount deficit, last report	$3,700 00	
Amount received 1878, fees—gate and entrance		3,040 20
Amount received 1878, booth rents and permits		993 30
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	3,122 50	
Amount paid 1878, for real estate, buildings etc		
Amount paid 1878, for current expenses other than premiums	1,257 65	
Amount remaining in treasury		
Amount deficit including mortgage, etc		3,817 24
Totals	$8,080 15	$8,080 15

McHENRY COUNTY.—Woodstock.

OFFICERS.—President, James Crow, Crystal Lake; Vice President, Richard Wray, Richmond; Thomas McRichards, Woodstock; Secretary, A. Bourne, Woodstock; Treasurer, James Nish, Woodstock.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		
Amount deficit, last report	$2,000 00	
Amount received 1878, fees—gate and entrance		$1,187 96
Amount received 1878, booth rents and permits		204 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	450 75	
Amount paid 1878, for real estate, buildings, etc	1,041 71	
Amount paid 1878, for current expenses other than premiums		
Amount remaining in treasury		
Amount deficit including mortgages, etc		2,000 00
Totals	$3,492 46	$3,492 46

McHENRY COUNTY.—Marengo.

OFFICERS.—President, A. Jones, Marengo; Vice Presidents, L. W. Sheldon, Union; H. Underwood. Marengo; Secretary, J. S. Rogers, Marengo; Treasurers, R. M. Patrick, Marengo; Marshall M. Butterfield, Marengo.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$4 17
Amount deficit, last report		
Amount received 1878, fees, gate and entrance		911 00
Amount received 1878, both rent and permits		73 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		329 08
Amount paid 1878, in premiums	$691 00	
Amount paid 1878, for real estate, buildings, etc	250 00	
Amount paid 1878, for current expenses other than premiums	376 75	
Amount remaining in treasury		
Amount deficit, including mortgages		
Total	$1 317 75	$1,317 75

McLEAN COUNTY.

OFFICERS.—President, T. D. Hartson, Bloomington; Vice Presidents, John O. Davis and F. M. Turk, Bloomington; Secretary, J. T. Didlake, Towanda; Treasurer, J Brewster, Bloomington.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$248 41
Amount deficit. last last report	$8,300 00	
Amount received 1878, fees—gate and entrance		3,756 69
Amount received 1878 booth rents and permits		371 35
Amount received 1878, sale shares of stock.		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		829 00
Amount paid 1878, in permits	1,737 00	
Amount paid 1878, for real estate buildings, etc		
Amount paid 1878, for current expenses other than premiums	3,208 93	
Amount remaining in Treasury	359 52	
Amount deficit including mortgages, etc		8,300 00
Totals	$13,605 45	$13,605 45

MENARD COUNTY.

OFFICERS.—President, Fred. Wilkinson, Greenview; Vice President, John T. Beekman, Tallula; Secretary, J. G. Strodman, Petersburg; Treasurer, John A. Brahm, Petersburg.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$16 57
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		2,913 54
Amount received 1878, booth rents and permits		950 60
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		800 00
Amount paid 1878, in premiums	$2,153 25	
Amount paid 1878, for real estate, buildings, etc	700 00	
Amount paid 1878, for current expenses other than premiums	1,007 33	
Amount remaining in treasury	20 13	
Amount deficit including mortgage, etc		
Totals	$4,780 71	$4,780 71

MERCER COUNTY.

OFFICERS.—President, A. J. Streeter, New Windsor; Vice President, D. H. Hays, Aledo; Secretary, E. B. David, Aledo; Treasurer, D. F. Hindman, Aledo.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$108 45
Amount deficit, last report	$980 00	
Amount received 1878, fees—gate and entrance		2,546 60
Amount received 1878, booth rents and permits		578 60
Amount received 1878, sale shares of stock		
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		180 00
Amount paid 1878, in premiums	1,948 00	
Amount paid 1878, for real estate, buildings, etc	504 80	
Amount paid 1878, for current expenses other than premiums	845 73	
Amount remaining in treasury	35 12	
Amount deficit, including mortgage, etc		800 00
Totals	$4,313 65	$4,313 65

MORGAN COUNTY.

OFFICERS.—President, W. D. Graves, Jacksonville; Vice Presidents, F. M. Morton, Jno. H. Potts, Jacksonville; Secretary, J. M. Dunlap, Jacksonville; Treasurer, B. F. Beesley, Jacksonville.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$99 83
Amount deficit, last report	$785 00	
Amount received 1878, fees—gate and entrance		3426 99
Amount received 1878, booth rents and permits		407 15
Amount received 1878, sale shares of tock		
Amount received 1878, state appropriation		100 00
Amount received 1877, other sources		656 75
Amount paid 1878, in premiums	3,[illegible] 75	
Amount paid 1878, for real estate, buildings, etc	100 00	
Amount paid 1878, for current expenses other than premiums	759 80	
Amount remaining in treasury	40 82	
Amount deficit, including mortgage, etc		273 65
	$4,964 37	$4,964 37

MOULTRIE COUNTY.

OFFICERS.—President, J. E. Eden, Sullivan; Vice President, John W. Dawson, Lovington; Secretary, S. M. Smyser, Sullivan; Treasurer, Wm. Kirkwood, Sullivan.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		$750 70
Amount received 1878, booth rents and permits		69 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$659 70	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	260 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		
Totals	$919 70	$919 20

OGLE COUNTY.—Oregon.

OFFICERS.—President, John W. Hitt, Mt. Morris; Vice President, H. C. Burchell, Oregon; Secretary, John T. Gantz, Oregon; Treasurer, B. F. Sheets, Oregon.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$8 85
Amount deficit, last report	$330 00	
Amount received 1878, fees—gate and entrance		904 70
Amount received 1878, booth rents and permits		278 35
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		236 40
Amount paid 1878, in premiums	833 00	
Amount paid 1878, for real estate, building, etc	1,111 87	
Amount paid 1878, for current expenses other than premiums	718 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		1,464 57
Totals	$2,992 87	$2,992 87

OGLE COUNTY.—Rochelle.

OFFICERS.—President, Wm. Stocking, Rochelle; Secretary, Geo. E. Turkington, Rochelle; Treasurer, J. T. Miller, Rochelle; General Superintendent, J. M. May, Rochelle; Executive Committee, M. J. Braiden, M. T. Ellinwood, Thos. Smith, W. A. Chambers, J. A. Countryman, Rochelle.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$1,500 00
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,893 15
Amount received 1878, booth rents and permits		564 90
Amount received 1878, sale shares of stock		870 00
Amount received 1878, state appropriation		
Amount received 1878, other sources		216 00
Amount paid 1878, in premiums	$1,662 50	
Amount paid 1878, for real estate, buildings, etc	2,570 50	
Amount paid 1878, for current expenses other than premiums	644 75	
Amount remaining in treasury	166 30	
Amount deficit, including mortgage, etc		
Totals	$5,044 05	$5,044 05

PEORIA COUNTY.

OFFICERS.—President, Jacob Littleton, Peoria; Vice President, John C. Proctor; Secretary, Roswell Bills, Peoria; Treasurer, Washington Cockle, Peoria.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$1,841 96
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		4,584 10
Amount received 1878, booth rents and permits		1,670 32
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		500 00
Amount paid 1878, in premiums	$3,177 75	
Amount paid 1878, for real estate, buildings, etc.	1,200 25	
Amount paid 1878, for current expenses other than premiums	895 38	
Amount remaining in treasury	$3,428 00	
Amount deficit, including mortgage, etc		
Totals	$8,696 38	$8,696 38

PERRY COUNTY.

OFFICERS.—President, William K. Murphy, Pinckneyville; Secretary, W. S. D. Smith, Pinckneyville; Treasurer, R. G. Williams.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report	.....	.....
Amount deficit, last report	$85 00	.....
Amount received 1878, fees—gate and entrance		$1,633 20
Amount received 1878, booth rents and permits,		586 05
Amount received 1878, sale shares of stock		.....
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		622 50
Amount paid 1878, in premiums	848 00	.....
Amount paid 1878, for real estate, buildings, etc	1,454 12	.....
Amount paid 1878, for current expenses other than premiums	208 00	.....
Amount remaining in treasury	346 63	.....
Amount deficit, including mortgage, etc	.....	.....
Totals	$2,941 75	$2,941 75

PIATT COUNTY

OFFICERS.—President, Jesse W Warner, Monticello; Vice President, E. P. Thompson, Bement; Recording Secretary, H. D. Peters, Corresponding Secretary, N. E. Rhoads; Treasurer, H. V. Moore, Monticello.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report	.....	$133 02
Amount deficit, last report	.....	.....
Amount received 1878, fees, gate and entrance		1,888 95
Amount received 1878, booth rents and permits		448 70
Amount received 18 8, sales shares of stock		.....
Amount received 1878, state appropriation	.....	100 00
Amount received 1878, other sources	.....	70 00
Amount paid 1878, in premiums	$1,588 50	.....
Amount paid 1878, for real estate, buildings etc	5[illegible] 46	.....
Amount paid 1878, for current expenses other than premiums	635 88	.....
Amount remaining in treasury	.....	.....
Amount deficit, including mortgage etc	.....	171 17
Totals	$2,811 84	$2,811 84

PIKE COUNTY.

OFFICERS.—President, Louis Ham, Chambersburg; Secretary, J. H. Crane; Treasurer, Strother Grigsley, Pittsfield; Directors C. P. Chapman, Daniel Bates, Pittsfield; E N. French, Milton; Henry Hall, Eldora; Allen Rush, Perry; Frank Zennbury, Pleasant Hill; W. P. Hart, Barry; R. A. McClintock, New Hartford; C. B. Duston, Summer Hill.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report	.....	.....
Amount deficit, last report	.....	.....
Amount received 1878, fees—gate and entrance	.....	$2,693 10
Amount received 1878, booth rents and permits	.....	900 07
Amount received 1878, sale shares of stock	.....	.....
Amount received 1878, state appropriation	.....	100 00
Amount received 1878, other sources		.....
Amount paid 1878 in premiums	$2,085 50	.....
Amount paid 1878, for real estate, buildings, etc	.....	.....
Amount paid 1878, for current expenses other than premiums	960 87	.....
Amount remaining in treasury	646 80	.....
Amount deficit, including mortgage, etc	.....	.....
Totals	$3,693 17	$3,693 17

POPE COUNTY.

OFFICERS.—President, James R Steagall, Golconda; Vice Presidents, Wm. C. Phelps, John Allen, Gordon Thompson, Golconda; J. C. Covington, New Liberty; Recording Secretary, J. E. Y. Hanna, Golconda; Corresponding Secretary, James U. Vineyard, Golconda; Treasurer, M. G. Bird, Golconda.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit last report	$230 00	
Amount received 1877, fees, gate and entrance		$585 10
Amount received 1878, booth rents and premiums		36 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	491 85	
Amount paid 1878, for real estate, buildings etc		
Amount paid 1878, for current expenses other than premiums	98 25	
Amount remaining in treasury		
Amount deficit, including mortgage etc		98 50
Totals	$820 10	$820 10

PUTNAM COUNTY.

OFFICERS.—President, W. D. Ham, Hennepin; Vice Presidents, Leonard Studyvin, John Peterson, Patrick Dore, Hennepin; Secretary, P. B. Durley, Hennepin; Treasurer, A. T Purviance, Hennepin.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$46 10	
Amount received 1878, fees-gate and entrance		$906 00
Amount received 1878, booth rents and permits		45 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		137 10
Amount paid 1878, in premiums	808 00	
Amount paid 1878, for real estate, buildings, etc	40 00	
Amount paid 1878, for current expenses other than premiums	579 00	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		284 50
Totals	$1,473 10	$1,473 10

RANDOLPH COUNTY.—Sparta.

OFFICERS.—President, John C. Boyle, Sparta; Vice Presidents, B. Crawford, Wm. C. Gordon, Sparta; John Andrew Tilden, Jas. Lessley, Houston; John McLaughlin, Coulterville; J. Rabb, Evansville; David Ohleoine, Red Bud; J. T. Weir, Sparta; Chas. Robbins, Steels Mills; Andrew Douglas, Chester, John Wilson, Bremen; Secretary, M. E. Foster, Sparta; Treasurer, J. C. Perkins, Sparta.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$936 36	
Amount received 1878, fees gate and entrance		$2,283 40
Amount received 1878 booth rents and permits		476 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		387 65
Amount paid 1878, in premiums	1,607 25	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878 for current expenses other than premiums	1,674 95	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		971 51
Totals	$4,218 56	$4,218 56

RANDOLPH COUNTY.—Chester.

OFFICERS.—President, Wm. McAdam, Chester; Vice President, Wm. A Gordon, Chester; Secretary, Wm. Schuchert, Chester; Treasurer, S. W. Morrison, Chester.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		...
Amount deficit, last report	$1,300 00	
Amount received 1878, fees—gate and entrance		$3,393 05
Amount received 1878, booth rents and permits		645 90
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		76 00
Amount paid 1878, in premiums	2,705 80	
Amount paid 1878, for real estate, buildings, etc	330 00	
Amount paid 1878 for current expenses other than premiums	883 80	
Amount remaining in treasury	195 35	
Amount deficit, including mortgage, etc		1,300 00
Totals	$5,414 95	$5,414 95

RICHLAND COUNTY.

OFFICERS.—President, Isaac Welty, Olney; Vice President, M. L. Howe, Olney; Secretary, A W. Mace, Olney; Treasurer, W. C. Rickard, Olney.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report		
Amount received 1878, fees gate and entrance		$2,126 50
Amount received 1878, booth rents and permits		376 00
Amount received 1878 sale shares of stock		
Amount received 1878, state appropriation.		
Amount received 1878, other sources		...
Amount paid 1878, in premiums	$1,817 00	
Amount paid 1878, for real estate, buildings etc		
Amount paid 1878, for current expenses other than premiums	364 02	
Amount remaining in treasury	321 48	
Amount deficit including mortgage, etc		
Totals	$2502 50	$2,502 50

SANGAMON COUNTY.

OFFICERS.—President, J. A. McClernand, Springfield; Secretary, W. H. Staley, Springfield; Treasurer, Henson Robinson, Springfield, Directors, J. R. Dunlap, Fancey Creek; J. S. Highmore, Rochester; S. N. Hitt, New Berlin; Jacob Leonard, Chatham; Geo. Pickrell, Wheatfield.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$2 37
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		6,683 80
Amount received 1878, booth rents and permits		2,253 10
Amount received 1878, sale shares of stock		1,109 95
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		2,357 26
Amount paid 1878, in premiums	$5,752 50	
Amount paid 1878, for real estate, buildings, etc	3,642 53	
Amount paid 1878, for current expenses other than premiums	3,073 96	
Amount remaining in treasury	37 49	
Amount deficit including mortgage, etc		
Totals	$12,506 48	$12,506 48

SCHUYLER COUNTY.

OFFICERS.—President, F. C. Cady, Camden; Vice President, E. M. Anderson, Rushville; Treasurer, Robt. L. Greer, Rushville; Recording Secretary, J. C. Scripps, Rushville; Corresponding Secretary, S. B. Montgomery, Rushville; Executive Committee, John A. Young, James Montooth, Rushville; Byron Crandall, Littleton; A. M. Foster, John Glandon, Brooklyn.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$450 00	
Amount received 1878, fees—gate and entrance		$1,880 50
Amount received 1878, booth rents and permits		395 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		482 00
Amount paid 1878, in premiums	1,442 50	
Amount paid 1878, for real estate, buildings, etc	1 261 00	
Amount paid 1878, for current expenses other than premiums	332 00	
Amount remaining in treasury	2 00	
Amount deficit, including mortgage, etc		630 00
		$3,487 50

SHELBY COUNTY.

OFFICERS.—President, Geo. A. Durkee, Shelbyville; Vice President, W. W. Thornton, Shelbyville; Secretary, Geo. A. Roberts, Shelbyville; Treasurer, Walter C. Headen, Shelbyville.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$952 21
Amount deficit last report	$2,500	
Amount received 1878, fees-gate and entrance		1,620 15
Amount received 1878, booth rents and permits		198 55
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878 other sources		210 04
Amount paid 1878, in premiums	1,414 50	
Amount paid 1878, for real estate, buildings, etc	1,397 11	
Amount paid 1878, for current expenses other than premiums	224 83	
Amount remaining in treasury	44 51	
Amount deficit, including mortgage, etc		2,500 00
Totals	$5,580 95	$5,580 95

STARK COUNTY.

OFFICERS.—President, Joseph D. Rhodes, Toulon; Vice President, Dennis Mawbey, Toulon; Recording Secretary, Jas. Nowlon, Toulon; Corresponding Secretary, Chas. Myers, Toulon; Directors, J. H. Quinn, Robert McKerghan, Toulon; J. L. Newman, West Jersey; Henry Colwell, Duncan; Thos. Oliver, Elmira; Samuel Wrigley, Wyoming, Cyrus Bocock, Castleton; E. P. Wright, Bradford.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$460 26
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		3,013 05
Amount received 1878, booth rents and permits		436 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		267 80
Amount paid 1878, in premiums	$2,834 70	
Amount paid 1878, for real estate, buildings, etc	75 00	
Amount paid 1878, for current expenses other than premiums	1,314 35	
Amount remaining in treasury	547 06	
Amount deficit, including mortgage, etc		
Totals	$4,271 11	$4,271 11

UNION COUNTY.

OFFICERS.—President, Asa Harmon, Anna; Secretary, Abram Cook, Jonesboro; Treasurer, Chas. Barringer, Jonesboro; Executive Committee, W. D. Frick, Jonesboro; G. W. Frick, Mill Creek; C. Kirkpatrick, Anna; O. P. Hill, Cobden; Alfred Leuce, Willards Landing.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$483 95
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,748 40
Amount received 1878, booth rents and permits		385 20
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$1,581 75	
Amount paid 1878, for real estate, buildings, etc	600 00	
Amount paid 1878, for current expenses other than premiums	591 29	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		55 49
Totals	$2,773 04	$2,773 04

VERMILION COUNTY.—Danville.

OFFICERS.—President, J. H. Oakwood, Catlin; Vice President, W. T. Sandusky, Catlin; Secretary, W. J. McCenathan, Catlin; Treasurer, D. B. Douglas.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$300 00
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		3,175 64
Amount received 1878, booth rents and permits		700 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		50 00
Amount received 1878, other sources		180 00
Amount paid 1878, in premiums	$2,063 00	
Amount paid 1878, for real estate, buildings, etc	900 00	
Amount paid 1878, for current expenses other than premiums	802 90	
Amount remaining in treasury	639 74	
Amount deficit including mortgage, etc		
Totals	$4,405 64	$4,405 64

VERMILION COUNTY.—Hoopeston District.

OFFICERS—President, J. A. Cunningham, Hoopeston; Vice President, K. Shanklin, Hoopeston; Secretary, Wm. Glaze, Hoopeston; Treasurer, Thomas Williams, Hoopeston.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$99 67
Amount deficit, last report	$1,407 72	
Amount received 1878, fees—gate and entrance		2,289 32
Amount received 1878, booth rents and permits		577 50
Amount received 1878, sale shares stock		30 00
Amount received 1878, state appropriation		
Amount received 1878, other sources		12 00
Amount paid 1878, in premiums	1,559 00	
Amount paid 1878, for real estate, buildings, etc	484 00	
Amount paid 1878, for current expenses other than premiums	594 76	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.		1,036 99
Totals	$4,045 48	$4,045 48

WABASH COUNTY.

OFFICERS.—President, Thos. Stone, Mt. Carmel; Vice President, Jeremiah Fox, Allendale; Secretary, M. D. McClintock, Mt. Carmel; A. C. Edgar, Mt. Carmel; General Superintendent, Joseph Litherland.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report ..	$1,350 00	
Amount received 1878, fees—gate and entrance		$1,074 10
Amount received 1878, booth rents and permits		282 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources . .		130 00
Amount paid 1878, in premiums	1,033 50	
Amount paid 1878, for real estate, buildings, etc	100 50	
Amount paid 1878, for current expenses other than premiums	347 60	
Amount remaining in treasury . .		
Amount deficit including mortgage, etc .		1,245 50
Totals	$2,831 60	$2,831 60

WARREN COUNTY.

OFFICERS.—President, Jno. B Meginnis, Monmouth; Vice President, Robt. L. Patton, Monmouth; Secretary, Geo. C Rankin, Monmouth; Treasurer, Rob't. M. Stevenson, Monmouth; Executive Committee, C. L. Buck, L. D Robinson, J. W. Marshall, J. W Sipper, Fred. E. Harding, Monmouth; J. W. Bridenthal, Lenox; D C. Graham, Cameron; W. J. Smith, Kirkwood.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		
Amount deficit, last report	$6,000 00	
Amount received 1878, fees—gate and entrance		$4,029 25
Amount received 1878, booth rents and permits		291 20
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation . . .		100 00
Amount received 1878, other sources		17 45
Amount paid 1878, in premiums .	3,276 50	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	955 40	
Amount remaining in treasury . .		
Amount deficit, including mortgage, etc . . .		5,794 00
Totals	$10,231 90	$10,231 90

WAYNE COUNTY.

OFFICERS.—President, J. T. Fleming, Fairfield; Vice President, W. H. Robinson, Fairfield; Secretary, N. E. Roberts, Fairfield; Treasurer, W. J. Sailor, Fairfield.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report . .		
Amount deficit, last report . . .	$1,050 00	
Amount received 1878, fees—gate and entrance . .		$1,082 26
Amount received 1878, booth rents and permits .		304 78
Amount received 1878, sale shares of stock . .		
Amount received 1878, state appropriation	. .	100 00
Amount received 1878, other sources	..	8 25
Amount paid 1878, in premiums	841 00	
Amount paid 1878, for real estate, buildings, etc	112 23	
Amount paid 1878 for current expenses other than premiums. .	478 45	
Amount remaining in treasury		
Amount deficit, including mortgage, etc.	. .	986 39
Totals	$2,481 68	$2,481 68

WHITESIDE COUNTY.—Sterling.

OFFICERS.—President, Samuel T. Baird, Sterling; Vice President, M. L. Coe, Rock Falls; Treasurer, W. A. McCune, Sterling; Secretary, C. M. Worthington, Sterling.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$310 00
Amount deficit, last report	$3,459 85	
Amount received 1878, fees—gate and entrance		3,180 65
Amount received 1878, booth rents and permits		851 00
Amount received 18 8, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		214 57
Amount paid 1878, in premiums	1,746 90	
Amount paid 1878, for real estate buildings, etc		
Amount paid 1878, for current expenses other than premiums	1,155 69	
Amount remaining in treasury	60 00	
Amount deficit, including mortgage, etc		1,766 22
Totals	$6,422 44	$6,422 44

WHITESIDE COUNTY.—Morrison.

OFFICERS.—President, James M. Pratt, Pratt Station; Vice President, Robert E Logan, Morrison; Secretary, Ed. J. Conger, Morrison; Treasurer, Chas. Bent, Morrison

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$151 81
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		2,375 05
Amount received 1878, booth rents and permits		612 75
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		
Amount received 1878, other sources		128 50
Amount paid 1878, in premiums	$1,365 25	
Amount paid 1878, for real estate, buildings, etc	77 80	
Amount paid 1878, for current expenses other than premiums	1 250 30	
Amount remaining in treasury	574 76	
Amount deficit, including mortgage, etc		
Totals	$3,268 11	$3,268 11

WHITESIDE COUNTY.—Albany.

OFFICERS.—President, Daniel Nicewonger, Albany; Vice President, D. J. Parker, Albany; Secretary, J. F. Happer, Albany; Treasurer, Warren Olds, Albany.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$2 71
Amount deficit, last report	$110 00	
Amount recieved 1878, fees—gate and entrance		548 15
Amount recieved 1878, booth rents and permits		230 50
Amount recieved 1878, sale shares of stock		
Amount recieved 1878, state appropriations		
Amount recieved 1878, other sources		
Amount paid 1878, in premiums	354 00	
Amount paid 1878, for real estate, buildings, etc	73 97	
Amount paid 1878, for current expenses, other than premiums	267 34	
Amount remaining in treasury	1 05	
Amount deficit, including mortgage etc		25 00
Totals	$806 36	$806 36

WILL COUNTY.

OFFICERS.—President, A. A. Francis, Joliet; Secretary, W. T. Nelson, Wilmington; Treasurer, E. H. Akin, Joliet; Directors, Jacob A. Henry, L. E. Ingalls, Jacob Adler, C. E. Kircheval, Geo. Munroe, Joliet; Samuel Haywood, Selah Knapp, Lockport; Geo. F. Gurney, Elwood; James L. Owen, Mokena; *Ex-officio*, Chas. Snoad, Joliet.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$253 00
Amount deficit, last report	$15,000 00	
Amount received 1878 fees—gate and entrance		2,618 11
Amount received 1878, booth rents and permits		420 50
Amount received 1878, sale shares of stock		1,036 00
Amount received 1878 state appropriation		100 00
Amount received 1878, other sources		1,501 00
Amount paid 1878, in premiums	1,591 00	
Amount paid 1878, for real estate, buildings, etc		
Amount paid 1878, for current expenses other than premiums	3,764 11	
Amount remaining in treasury		
Amount deficit, including mortgage, etc		14,426 50
Totals	$20,355 11	$20,355 11

WILLIAMSON COUNTY.

OFFICERS.—President, A. N. Lodge, Marion; Vice President, R M. Hundley, Marion; Secretary, L. A. Goddard, Marion; Treasurer, C. W. Kern, Marion. Directors—S S Vick, J. J. Jenkins, W. E. Wiley, Wm. Aikman, Marion; Bazil Holland, Corinth.

FINANCIAL EXHIBIT FOR 1878

Amount in treasury, last report		$558 90
Amount deficit, last report		
Amount received 1878, fees—gate and entrance		1,622 20
Amount received 1878, booth rents and permits		342 00
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	$1,137 00	
Amount paid 1878, for real estate, building, etc	1,270 00	
Amount paid 1878, for current expenses other than premiums	386 80	
Amount remaining in treasury		170 70
Amount including mortgage, etc		
Totals	$2,793 80	$2,793 80

WINNEBAGO COUNTY

OFFICERS—President, John Lake, Rockford; Vice President, Chas. O. Upton, Rockford; Secretary, Hiram R. Enoch; Treasurer, E. A. Sanford, Rockford. Directors—A. I. Enoch, Jas. R. Bartlett, A. E Cutler, H. W. Carpenter, Rockford; Lucien B Williams, Harrison; Lawrence McDonald, Pecatonica; John Smith, Argyle.

FINANCIAL EXHIBIT FOR 1878.

Amount in treasury, last report		$2,515 61
Amount deficit, last report	$10,127 37	
Amount received 1878, booth rents and permits		610 50
Amount received 1878, sale shares of stock		
Amount received 1878, state appropriation		100 00
Amount received 1878, other sources		
Amount paid 1878, in premiums	2,742 50	
Amount paid 1878, for real estate, buildings, etc	200 00	
Amount paid 1878, for current expenses other than premiums	2,091 30	
Amount remaining in treasury	2,218 88	
Amount deficit, including mortgage, etc		8 533 34
Totals	$17,380 05	$17,380 05

ILLINOIS STATE FAIR AND FAT STOCK SHOW.

FREEPORT, SEPTEMBER 16—21, 1878.

OFFICERS.—President, D. B. Gillham, Upper Alton; Ex-President, J. P. Reynolds, Chicago; Secretary, S. D. Fisher, Springfield; Treasurer, John W. Bunn, Springfield.

FINANCIAL EXHIBITS FOR 1878—STATE FAIR

Amount in treasury, last report	...	$8,669 28
Amount deficit, last report, including debt covered by mortgage	...	...
Amount received 1878, fees—gate and entrance—Fair	...	14,975 45
Amount received 1878, fees—gate and entrance—Fat Stock Show	...	4,624 06
Amount received 1878, booth rents and permits	...	...
Amount received 1878, sale shares of stock	...	...
Amount received 1878, state appropriation	...	3,000 00
Amount received 1878, other sources	...	...
Amount paid 1878, in premiums, State Fair	$12,388 34	...
Amount paid 1878, in premiums, Fat Stock Show	2,395 00	...
Amount paid in premiums, winter meeting	453 00	...
Amount paid 1878, for real estate, buildings, and permanent improvements, etc	453 00	...
Amount paid 1878, for current expenses other than premiums	11,132 77	...
Amount remaining in treasury	4,899 68	...
Amount deficit, including debt covered by mortgage	...	...
Totals	$31,268 79	$31,268 79

EXHIBITION.

Departments	Number of entries in each department	Amount of premiums offered to each department	Amount of premiums paid to each department
A. Cattle State Fair	$432 00	$3,525 00	$3,310 00
A Cattle—Fat Stock Show	138 00	1,875 00	1,555 00
B. Horses	576 00	3,530 00	3,125 00
B Mules and asses	40 00	410 00	325 00
C Sheep—State Fair	224 00	775 00	765 00
C Sheep—Fat Stock Show	24 00	725 00	290 00
D Hogs—State Fair	596 00	1,420 00	1,420 00
D Hogs—Fat Stock Show	53 00	600 00	430 00
E Poultry—State Fair	539 00	784 00	537 00
E Poultry—Fat Stock Show	5 00	170 00	120 00
F. Mechanic Arts {Light machines, agricultural implements, stoves, castings, worked metals, household furniture, manufactures of various kinds, engines, machinery etc., vehicles, sewing and knitting machines' etc, etc.}	435 00	150 00	100 00
G. Farm products {Grains, seeds, vegetables, butter, cheese, cakes etc}	454 00	684 00	594 00
H Horticulture and floriculture {Trees, fruits, flowers plants, canned and preserved fruits, jellies, pickles, etc}	893 00	1,249 00	1,079 00
I. Fine arts {Musical instruments, sculpture, painting, drawing, wax, feathers, hair work, etc}	103 00	96 00	78 00
K. Textile fabrics {Mill fabrics, household fabrics, needle work}	618 00	480 00	417 00
L. Natural history {Botany, mineralogy, conchology, entomology, ichthyology, herpetology}	28 00	400 00	230 00
M. Equestrianism	...	...	...
N Education	174 00	300 00	159 00
Speed ring	...	...	...
Miscellaneous	...	...	249 34
Winter meeting	31 00	1,105 00	453 00
Totals	5,363 00	$18,268 00	$15,236 34

175 silver medals offered and 44 awarded; 52 diplomas offered and 21 awarded

S. D. FISHER,
Secretary State Board of Agriculture.

ILLINOIS AGRICULTURAL FAIRS—1878.

Table showing Number of entries, amount of Premiums offered, and amount of Premiums paid by each Association.

LIVE STOCK EXHIBIT.

County	Location of Fair.	Cattle.			Horses.			Mules and Asses			Sheep			Hogs		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Adams ..	Camp Point	78	$426 00	$331 00	315	$446 00	$442 00	26	$64 00	$46 00	82	$134 00	$134 00	124	$295 00	$256 00
Alexander																
Bond . . .																
Boone . .	Belvidere .	92	341 00	110 25	95	238 00	129 00				66	80 00	51 75	65	189 00	76 50
Brown	Mt Sterling	37	217 00	146 00	150	565 00	420 00	21	60 00	50 00	68	56 00	56 00	78	257 00	182 00
Bureau . .	Princeton .	77	535 00	446 00	125	541 00	444 00	4	27 00	22 00	26	94 00	76 00	101	365 00	309 00
Calhonn ..																
Carroll .	Mt Carroll	39	164 50	117 00	117	229 50	132 50	2	15 00	3 00	12	26 00	16 50	41	168 50	106 00
Cass .. .	Virginia	63	544 00	429 00	186	419 00	419 00	12	46 00	41 00	35	132 00	120 00	70	408 00	247 00
Champaign	Champaign															
Christian .	Taylorville .	23	340 00	149 00	72	1,070 00	440 00	11	102 00	66 00	6	70 00	24 00	18	324 00	120 00
Clark	Marshall	14	143 00	92 00	117	295 00	264 00	13	57 00	33 00	6	51 00	18 00	25	60 00	40 00
Clay .. .	Louisville	18	94 00	52 50	51	495 00	109 70	13	89 00	44 00	7	25 00	14 00	4	38 00	18 20
Clinton																
Coles .	Charleston	64	460 00	394 00	199	415 00	389 00	10	55 00	32 50	8	86 00	22 50	38	168 00	130 50
Cook ..																
Crawford . .	Robinson	30	151 00	84 00	81	284 00	187 50	8	65 00	21 00	33	84 00	44 00	48	179 00	90 00
Cumberland	Majority Point	18	231 00	87 50	64	435 00	241 00	1	41 50	5 00	3	58 00	13 00	3	61 00	8 00
DeKalb	Sycamore .	50	372 00	170 00	128	327 00	224 00	9	45 00	27 00	18	87 00	53 00	28	87 00	37 00
DeKalb .	DeKalb .	14	168 00	96 00	54	251 00	100 00	8	50 00	16 00	42	90 00	40 00	28	90 00	60 00
DeWitt	Clinton .	70	431 00	199 75	184	475 00	174 50	15	49 50	21 50	30	92 50	38 50	83	183 00	75 50
Douglas.	Tuscola	40	227 00	31 20	193	488 00	81 80	28	82 00	12 60	8	26 00	5 20	61	243 00	39 00
DuPage .	Wheaton .	79	268 00	179 70	64	298 00	250 00	3	18 00	5 00	39	69 00	62 00	34	112 00	73 00
Edgar ..	Paris .	68	405 00	386 00	245	524 00	512 00	13	53 00	44 00	2	20 00	20 00	57	172 00	164 00
Edwards	Albion	53	293 00	147 00	192	471 60	441 50	12	41 00	33 50	21	74 00	46 00	46	220 00	106 50
Effingham																
Fayette . .	Vandalia . .	46	133 00	109 00	153	202 00	181 00				43	59 00	40 00	59	73 50	51 25
Ford	Paxton	38	227 00	99 00	68	349 00	152 00	2	31 00	4 50				30	190 00	60 00
Franklin	Benton... . .	35	137 50	66 00	157	622 00	383 00				12	26 00	26 00	4	72 00	16 00
Fulton	Canton.... ...	44	693 00	82 83	112	403 00	86 33	1	100 00	...	17	167 00	27 00	129	350 00	77 00

Ful n	Avon	162	484 00	295 00	213	349 00	305 00	23	27 00	27 00	37	66 00	82 00	318	234 00	222 00
Gal tin	Shawneetown	28	181 00	125 00	85	572 50	400 00	26	94 00	77 50	6	48 00	19 00	26	150 00	70 00
Gre ne	Carrollton	32	186 00	138 00	212	516 00	480 00	21	70 00	40 00	49	78 00	78 00	60	140 00	140 00
Gru dy	*Morris	59	2 9 00	137 00	111	371 00	173 00				25	30 00	30 00	47	136 00	70 00
Ha ilton	.....															
Ha ock																
Ha in	Elizabethtown	7	69 50	26 50	50	269 50	204 50	13	57 50	40 50		17 75		5	18 50	7 00
He erson	Biggsville	57	332 00	197 00	187	412 00	331 00	12	29 00	24 00	11	47 00	25 00	36	146 00	107 00
He v	Cambridge	38	624 00	303 00	114	419 00	372 00				15	92 00	59 00	48	250 00	192 00
Iro ois	Onarga	40	235 00	57 20	119	227 00	86 40	22	46 00	13 20	5	8 00	1 20	42	102 00	40 40
Jac on	Murphysboro	9	132 00	52 50	109	632 50	203 00	33	82 50	78 50	9	39 00	20 50	9	65 00	21 00
Jas r	Newton	50	360 00	110 00	114	260 00	102 00	22	48 00	20 00	22	56 00	16 60	31	94 00	34 00
Jeff rson	Mt Vernon	33	262 00	190 00	128	740 00	700 00	28	107 00	90 00	27	63 00	41 00	46	122 00	107 00
Jer y	Jerseyville	52	492 00	375 00	318	000 00	970 00	31	125 00	90 00	134	183 00	173 00	188	271 00	271 00
JoD viess	Galena	76	202 00	104 00	73	251 50	127 50	6	33 00	17 75	13	87 00	40 00	26	180 00	55 35
JoD viess	Warren	52	151 50	111 50	31	137 00	75 00	2	9 00	6 00	6	18 00	18 00	16	34 50	27 00
Joh son																
Kar	Aurora	94	526 50	172 40	113	326 00	130 40	9	35 00	6 00	29	108 00	28 80	58	262 00	68 00
Kar akee	Kankakee	53	373 00	188 10	179	431 00	245 70	8	37 00	27 90	29	77 00	50 40	82	202 00	128 90
Ker all	Bristol	31	500 00	75 00	54	282 00	136 80	10	30 00	8 40	14	56 00	32 40	21	240 00	60 00
Kno	Knoxville	62	537 00	308 00	238	515 00	418 00	21	78 00	46 00	104	135 00	132 00	127	225 00	225 00
Lak	Libertyville	42	148 50	40 75	93	121 00	53 00	2	3 00	1 50	50	68 00	29 25	21	83 00	22 00
LaS le	Ottawa	100	644 00	394 00	270	724 00	435 00	2	62 00	6 00	95	115 00	115 00	82	204 00	125 00
Law ence	Lawrenceville	16	116 00	50 00	20	97 00	54 00	16	50 00	39 00	12	51 00	30 00	16	86 00	46 00
Lee																
Livi gston	Fairbury	147	850 00	677 00	344	865 00	658 00	24	52 00	34 00	19	60 00	33 00	59	274 00	163 00
Log n	Lincoln	80	551 00	401 00	419	704 00	570 00	14	49 00	33 00	80	106 00	101 00	136	277 00	260 00
Log n	Atlanta	88	606 00	311 00	422	658 00	512 00				63	74 00	66 00	65	137 00	137 00
Mac n	Decatur	72	575 00	345 00	234	830 00	447 00	11	45 00	27 30	78	195 00	115 80	69	229 00	137 00
Mac upin	Carlinville	33	435 00	340 00	215	635 00	605 00	9	45 00	20 00	24	93 00	93 00	70	166 00	132 00
Mac son																
Mar n	Centralia	83	233 00	186 00	225	549 50	449 50	14	40 00	31 00	45	44 00	42 00	55	121 00	102 00
Mar hall	Wenona	127	873 00	856 00	318	953 00	834 00	7	108 00	39 00	103	212 00	202 00	265	343 00	336 00
Mas n	Havana	27	276 00	121 00	94	361 00	211 00	5	98 00	24 00	22	99 00	68 00	46	156 00	144 00
Mas ic	Metropolis	11	46 00	20 50	45	127 00	119 00	4	35 00	6 50	1	5 00	2 50	6	16 00	8 50
Mcl nough	Macomb	97	259 00	251 00	158	284 50	205 00	9	56 00		34	43 00	41 50	80	175 00	167 00
Mcl nry	Woodstock	42	386 00	49 00	130	348 00	114 00	4	44 00	5 00	62	170 00	68 00	43	127 00	35 50
Mcl nry	Marengo	87	439 00	130 00	43	174 00	69 00	5	12 00	5 00	37	107 50	48 00	90	165 00	85 00
Mcl an	Bloomington	78	555 00	267 00	427	262 00	479 00	21	91 00	27 00	72	93 00	67 00	112	266 00	125 50
Mer rd	Petersburg	54	471 00	149 00	203	826 00	353 00	9	61 00	17 50	34	159 00	57 00	74	292 00	124 00
Mer er	Aledo	65	395 00	320 00	185	630 00	430 00	8	48 00	20 00	45	129 00	115 00	108	230 00	210 00
Mor oe																
Mor gomery																
Mor an	Jacksonville	50	370 00	358 75	219	630 00	508 00	13	70 50	52 50	70	228 50	220 50	178	411 00	330 00
Mou trie	Sullivan	56	296 00	144 00	58	587 00	196 00	6	72 00	25 00	14	67 00	20 00	37	213 00	100 00
Ogl	Oregon	31	509 00	94 00	125	297 00	198 00	1	18 00		38	87 00	36 00	19	66 00	48 00
Ogl	Rochelle	35	698 00	129 00	186	404 00	376 00	4	33 00	14 00	43	113 00	104 00	47	188 00	100 00
Peo a	Peoria	97	763 00	467 00	125	943 00	815 00				130	264 00	258 00	208	280 00	274 00
Per	Pinckneyville	14	113 00	40 50	70	305 00	174 00	20	59 00	41 00	20	35 00	21 00	18	89 00	41 00
Pla	Monticello	44	263 00	248 00	76	410 00	347 50	12	60 00	40 00	6	45 00	11 00	16	111 00	67 00
Pik	Pittsfield	51	443 00	267 00	107	420 00	349 00	6	46 00	27 00	26	187 00	168 00	56	229 00	204 00

Live Stock Exhibit—Continued.

County	Location of Fair	Cattle.			Horses			Mules and Asses.			Sheep.			Hogs		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Pope	Golconda	29	$55 00	$52 00	40	$181 00	$122 00	11	$76 00	$27 00	16	$46 00	$44 00	20	$48 00	$48 00
Pulaski																
Putnam	Hennepin	25	164 00	65 00	97	317 00	227 00	6	32 00	21 00	8	80 00	26 00	65	125 00	125 00
Randolph	Sparta	76	418 00	233 00	77	398 00	297 00	24	92 00	96 00	33	106 00	80 00	56	330 00	153 00
Randolph	Chester	49	525 00	440 00	141	697 00	480 00	18	118 00	60 00	33	145 00	105 00	28	170 00	105 00
Richland	Olney	55	548 00	366 00	73	348 00	215 00	5	111 00	55 00	13	44 00	34 00	58	230 00	208 00
Rock Island																
Saline																
Sangamon	Springfield	120	1,225 00	820 00	387	935 00	908 00	33	125 00	95 00	169	242 00	233 00	341	510 00	465 00
Schuyler	Rushville	35	405 00	175 00	148	561 50	356 00	20	50 00	44 00	56	105 00	69 50	40	171 00	113 00
Scott																
Shelby	Shelbyville	43	370 00	311 00	60	366 00	348 00	11	77 00	59 00	44	117 00	108 00	27	186 00	170 00
Stark	Toulon	71	956 00	330 00	167	527 00	525 00	9	82 00	46 50	46	148 00	106 00	88	210 00	185 00
St. Clair																
Stephenson																
Tazewell																
Union	Jonesboro	80	293 50	203 25	197	364 00	389 00	56	112 00	101 50	26	100 50	60 00	27	126 00	92 00
Vermilion	Hoopeston	87	409 00	402 00	183	385 00	330 00	22	63 00	51 00	31	62 00	35 00	82	206 00	138 00
Vermilion	Danville	73	530 00	400 00	206	317 00	158 00	12	48 00	24 00	48	66 00	51 00	118	204 00	150 00
Wabash	Mt. Carmel	33	375 00	107 00	35	210 00	112 00	8	54 00	16 00	6	49 50	17 00	6	132 00	20 00
Warren	Monmouth	34	398 00	315 00	263	1,095 00	1,037 50	13	39 00	34 00	40	110 00	100 00	48	325 00	305 00
Washington																
Wayne	Fairfield	25	275 00	97 00	91	407 00	275 00	9	54 00	32 00	16	124 00	46 00	19	188 00	55 00
White																
Whiteside	Sterling	83	358 00	297 00	162	263 00	220 00	3	18 00	6 00	38	97 00	67 00	45	121 00	103 00
Whiteside	Morrison	55	200 00	172 00	114	171 00	154 00	8	19 00	11 00	57	99 00	79 00	66	114 00	99 00
Whiteside	Albany	21	132 00	48 00	61	87 00	65 00	3	4 00	2 00	6	18 00	11 00	12	67 00	18 00
Will	Joliet	37	162 00	104 00	65	228 00	188 00	4	57 00	16 00	57	66 00	57 00	115	212 00	189 00
Williamson	Marion	42	243 00	140 00	70	235 00	210 00	20	89 00	72 00	3	48 00	32 00	11	98 00	38 00
Winnebago	Rockford	44	419 00	196 00	161	331 00	302 00	4	25 00		114	120 00	114 00	68	157 00	122 00
Woodford																
State Fair	Freeport	432	3,525 00	3,310 00	575	3,530 00	3,125 00	40	410 00	325 00	224	775 00	765 00	596	1,420 00	1,420 00
Fat Stock Show	Chicago	138	1,875 00	1,555 00							24	725 00	295 00	53	600 00	430 00
Total		4,789	$38,036 50	$23,704 58	13,759	$43,461 60	$31,268 63	1,064	$5,006 50	$2,869 65	3,459	$9,148 25	$6,430 80	6,325	$18,011 00	$12,458 63

County	Location of Fair	Poultry			Mechanic Arts.			Farm Products.			Horticulture and Floriculture.			Fine Arts.		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Adams	Camp Point	52	$53 00	$39 00	35	$40 00	$33 00	179	$139 00	$116 00	569	$197 00	$194 00	59	$44 00	$31 00
Alexander																
Bond																
Boone	Belvidere	57	76 50	25 13	74	243 00	91 50	100	51 50	33 00	96	87 00	57 75	67	173 00	114 00
Brown	Mt Sterling	48	47 00	32 00	50	97 00	43 00	141	91 00	54 00	347	101 00	88 00	26	32 00	18 00
Bureau	Princeton	13	93 00	8 00	31	86 00	35 00	50	60 00	33 0	271	225 00	188 00	29	66 00	38 00
Calhoun																
Carroll	Mt Carroll	14	37 00	26 00	22	123 60	40 05	209	94 50	86 25	70	49 00	45 25	175	149 75	77 25
Cass	Virginia	49	33 00	32 00	19	102 00	72 00	101	56 00	42 00	495	124 00	110 00	60	54 00	51 00
Champaign	Champaign															
Christian	Taylorville	63	202 00	84 50	23	120 00	81 00	24	109 00	36 00	76	190 00	62 00	55	144 00	43 00
Clark	Marshall	24	47 00	21 00	3	40 00	28 00	55	29 00	25 00	64	12 00	17 00			
Clay	Louisville	32	40 00	23 10				45	85 00	21 00	38	42 00	18 00			
Clinton																
Coles	Charleston	49	66 00	53 00	15	141 00	21 00	176	81 00	59 00	338	154 00	141 50	98	32 00	36 50
Cook																
Crawford	Robinson	22	17 00	12 00	29	168 00	48 00	65	51 00	28 00	402	138 00	93 50	10	30 00	20 00
Cumberland	Majority Point	5	28 50	5 00	2	19 5		44	87 25	33 50	25	107 00	17 00	20	38 00	15 50
DeKalb	Sycamore	5	18 00	4 00	33	76 00	32 00	38	51 00	37 00	19	100 00	27 00	16		16 00
DeKalb	DeKalb	18	12 00	5 00	86			124	40 00	18 00	220	40 00	28 00	92	25 00	16 00
DeWitt	Clinton	29	19 00	7 50	68	164 00	27 50	118	73 00	30 20	332	87 00	37 00	20	21 00	4 00
Douglas	Tuscola	22	35 00	5 80	16	117 00	6 40	83	169 00	18 10	132	76 00	21 00	57	57 00	10 40
DuPage	Wheaton	19	67 00	12 75	28	13 00	8 00	45	42 00	30 00	30	36 00	30 00	60	38 00	24 50
Edgar	Paris	89	130 00	65 50	67	229 00	114 00	189	144 00	129 00	770	416 00	414 00	83	108 00	88 00
Edwards	Albion	15	21 00	10 50	45	156 50	80 00	219	93 75	76 50	31	57 50	22 50	3	15 00	2 50
Effingham																
Fayette	Vandalia	36	17 00	17 00	22	86 00	17 00	76	53 00	37 00	427	163 25	112 00	34	30 00	19 00
Ford	Paxton	23	43 00	12 75	3			98	57 00	28 50	177	109 00	53 60	15	30 00	3 40
Franklin	Benton	13	13 50	9 00	10			36	31 00	21 00	133	40 00	40 00			
Fulton	Canton	45	94 00	18 66	64	392 00	29 40	225	328 00	52 66	524	368 00	121 79	46	140 00	15 33
Fulton	Avon	28	45 00	15 0	56	76 00	52 00	590	130 00	55 00	420	120 00	55 00	110	50 00	35 00
Gallatin	Shawneetown	20	40 00	22 00	7	110 00	27 00	127	112 50	75 00	127	104 0	71 25	72	45 50	10 50
Greene	Carrollton	27	49 00	32 00	96	182 00	130 00	100	108 00	82 00	464	153 00	109 00	64	93 00	74 00
Grundy	*Morris	100	103 30	103 30	56	146 00	146 00	96	126 50	126 50	123	160 50	160 50	17	89 50	89 50
Hamilton																

Exhibit Illinois Agricultural Fairs, 1878—Continued.

County	Location of Fair.	Poultry.			Mechanic Arts.			Farm Products			Horticulture and Floriculture			Fine Arts.		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Hancock																
Hardin	Elizabethtown	10	$19 25	$13 00	16	$108 50	$18 50	36	$58 50	$31 00	92	$61 75	$60 7	6	$13 50	$6 00
Henderson	Biggsville	22	23 75	16 00	51	36 00	24 00	140	55 75	50 00	606	115 50	159 50	6	16 00	3 00
Henry	Cambridge	112	88 00	75 00	23	77 00	58 00	272	123 00	116 00	385	160 50	133 00	75	111 50	68 00
Iroquois	Onarga	30	40 50	6 00	25	95 00	14 40	113	99 00	38 80	253	143 50	45 40	14	26 00	4 00
Jackson	Murphysboro	11	24 00	5 00				65	46 00	28 00	125	66 00	35 25			
Jasper	Newton	50	20 00	8 00	20	45 00	18 00	70	60 00	20 00	60	72 00	24 00	24	54 00	20 00
Jefferson	Mt Vernon	23	25 00	13 00	16						146	218 00	126 00	190	106 00	68 00
Jersey	Jerseyville	109	126 00	94 00	71	394 00	298 00	568	232 00	192 00	810	203 00	282 00	525	284 00	247 00
JoDaviess	Galena	57	49 00	21 95	62	197 50	150 70	180	170 00	56 30	130	147 50	89 15	10	49 00	25 00
JoDaviess	Warren	30	36 75	21 00	23			76	27 00	20 25	33	29 50	17 55	10	16 50	7 55
Johnson																
Kane	Aurora	115	46 00	17 60	43			144	195 50	58 00	19	38 00	6 00	38	54 50	17 60
Kankakee	Kankakee	94	49 00	28 75	42	99 00	47 70	119	73 00	43 65	14	57 00	34 20	44	51 50	28 80
Kendall	Bristol	44	80 00	33 00	56	175 00	34 20	173	150 00	54 60	38	75 00	15 00	68	200 00	44 40
Knox	Knoxville	151	80 00	72 00	124	215 00	183 00	288	114 00	106 00	201	115 00	96 00	33	110 00	46 00
Lake	Libertyville	56	80 50	12 75	2			67	51 00	22 75	35	33 00	16 00			
LaSalle	Ottawa	129	165 00	103 00	80			276	310 00	179 00	200	383 00	233 50	102	130 00	76 00
Lawrence	Lawrenceville	5	13 00	6 00		36 00		46	110 00	55 00	41	45 00	20 00	15	35 00	15 00
Lee																
Livingston	Fairbury	83	81 00	39 95	78	104 00	80 00	149	62 25	45 75	346	168 50	137 75	13	29 00	4 00
Logan	Lincoln	116	79 50	110 50	152	194 00	77 00	301	150 50	171 25	918	154 50	248 25	206	78 25	101 75
Logan	Atlanta	137	78 00	43 00	105	180 00	125 00	221	147 00	117 00	927	174 00	157 00	102	78 00	59 00
Macon	Decatur	160	130 00	69 00	200	85 00	50 00	245	167 00	100 20	40	42 00	25 20			
Macoupin	Carlinville	82	90 00	74 00	59	131 00	82 00	3	39 00	20 00	270	183 50	143 50	34	51 00	45 00
Madison																
Marion	Centralia	25	50 00	21 00	62	141 00	89 00	93	69 00	45 50	301	159 00	109 50	31	57 00	31 00
Marshall	Wenona	96	95 00	65 00	154	178 00	106 00	232	113 00	104 00	430	198 00	174 00	164	70 00	62 00
Mason	Havana	56	41 00	37 00	35	51 00	25 00	195	122 00	70 00	357	92 00	87 00	8	25 00	9 00
Massac	Metropolis	2	4 00	2 00	9	59 00	26 00	21	72 50	33 00	6	16 00	8 00	2	10 00	2 00
McDonough	Macomb	71	103 50	54 00	44	168 00	59 00	125	46 50	37 25	346	131 85	120 00	51	35 50	14 00
McHenry	Woodstock	34	34 50	8 25	32			241	64 50	19 50	259	100 75	41 25	81	66 50	23 25
McHenry	Marengo	42	33 50	16 00	39			120	96 50	66 75	180	139 25	91 50	63	24 50	9 50
McLean	Bloomington	75	128 50	49 25	41	205 00	73 00	147	131 00	61 00	480	141 00	70 50	86	59 00	29 50
Menard	Petersburg	46	94 00	25 00	23	76 00	21 00	176	115 00	67 00	422	146 00	81 80	75	117 00	50 90

Mercer	Aledo	40	100 00	89 00	98	105 00	80 00	253	130 00	90 00	882	240 00	220 00	58	98 00	54 00
Monroe																
Montgomery																
Morgan	Jacksonville	65	93 00	62 00	136	273 00	245 50	255	147 50	126 00	714	220 50	182 00	143	125 50	89 50
Moultrie	Sullivan	48	55 50	12 00	9	72 00	6 00	23	47 00	15 00	155	82 00	30 00	12	39 00	4 00
Ogle	Oregon	27	36 00	25 00	38	55 00	20 00	91	93 00	55 00	119	108 00	75 00	26	41 50	36 00
Ogle	Rochelle	58	65 00	53 00	80	123 00	80 00	187	94 00	93 00	627	107 00	136 50	34	34 50	23 00
Peoria	Peoria	116	97 00	85 00	53	85 00	18 00	155	232 50	125 00	215	137 50	69 00	76	125 00	69.00
Perry	Pinckneyville	4	21 00	6 00	16			56	56 50	35 50	52	22 50	11 50	3	6 00	1 50
Piatt	Monticello	19	51 00	17 00	16	30 00		18	59 00	13 00	55	69 50	31 50	7	16 00	16 00
Pike	Pittsfield	63	44 00	42 00	23	10 00	10 00	55	53 00	41 00	38	59 00	53 00	13	28 00	22 00
Pope	Golconda	4	6 00	3 00	10	39 50	11 00	63	97 50	75 00	21	33 00	27 00	2	6 00	1 00
Pulaski																
Putnam	Hennepin	6	14 00	3 50	70	37 00	7 00	135	43 00	24 00	128	70 00	35 50	31	77 00	22 00
Randolph	Sparta	64	25 50	43 50	45	116 00	69 00	111	76 50	45 50	353	126 00	127 00			
Randolph	Chester	76	110 00	98 80	28	140 00	92 00	222	135 50	130 00	319	86 00	56 00	61	85 00	45 00
Richland	Olney	156	68 00	56 00	56	138 00	50 00	43	87 00	54 50	82	87 00	52 00	31	42 00	13 00
Rock Island																
Saline																
Sangamon	Springfield	214	218 50	161 50	109	430 00	382 00	249	201 00	169 00	978	432 00	359 00	238	183 00	154 00
Schuyler	Rushville	29	25 50	15 50	18	100 00	41 25	108	54 00	42 00	81	72 50	45 00	26	22 50	15 00
Scott																
Shelby	Shelbyville	24	58 00	41 50	39	153 00	64 00	49	88 00	38 00	119	79 00	67 00	22	41 00	25 00
Stark	Toulon	122	102 50	70 00	132	43 00	24 00	673	214 00	203 50	1,022	203 00	180 25	14	107 00	82 00
St. Clair																
Stephenson																
Tazewell																
Union	Jonesboro	27	22 50	18 00	65	342 50	213 50	156	87 40	89 50	223	143 25	147 95	153	137 25	105 25
Vermilion	Hoopeston	55	88 00	29 00	19	34 00	12 00	200	104 00	45 00	148	77 00	71 00	20	22 00	4 00
Vermilion	Danville	59	111 00	70 00	79	198 00	70 00	149	71 00	60 00	352	70 00	50 00	108	53 00	20 00
Wabash	Mt. Carmel	5	15 00	3 50	25	229 50	67 00	58	61 50	26 95	90	125 50	69 00	22	74 00	38 00
Warren	Monmouth	113	103 50	85 50	32	69 00	52 50	216	108 00	94 50	639	150 50	136 50	98	65 50	44 00
Washington																
Wayne	Fairfield	18	15 50	7 00	8	104 00	28 00	60	51 20	30 00	131	95 75	56 75			
White																
Whiteside	Sterling	59	39 50	32 00	121	266 00	144 90	375	165 50	147 00	806	242 75	228 25	114	77 00	59 25
Whiteside	Morrison	72	75 50	60 50	109	126 50	97 00	261	101 75	92 25	589	191 50	188 00	40	33 00	25 00
Whiteside	Albany	14	19 00	8 00	25	2 00	2 00	60	33 00	25 00	263	68 50	51 00	3		
Will	Joliet	25	56 00	40 00	73	165 00	148 00	103	138 00	100 00	120	216 00	180 00	110	68 00	60 00
Williamson	Marion	6	9 00	9 00	6	74 00	18 00	60	58 00	58 00	20	11 00	11 00	7	6 50	6 00
Winnebago	Rockford	98	73 50	48 00				178	136 50	100 50	138	398 00	383 50	86		
Woodford																
State Fair		539	784 00	537 00	435	150 00	100 00	454	684 00	594 00	893	1,239 00	1,079 00	103	96 00	78 00
FatStockShow		5	170 00	120 00												
Totals		5 220	$6,177 55	$3 813 39	4,620	$9,687 00	$4,994 00	12,981	$9,451 85	$6,240 46	25,562	$12,579 60	$9,617 39	4,935	$5,177 25	$3,081 13

Exhibit Illinois Agricultural Fairs, 1878.

County	Location of Fair	Textile Fabrics			Natural History			Equestrianism			Education			Speed Ring		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Adams	Camp Point	623	$268 00	$232 00										12	$175 00	$175 00
Alexander																
Bond																
Boone	Belvidere	199	73 50	49 12				14	58 00	21 75				25	605 00	381 00
Brown	Mt Sterling	155	177 00	143 00	20			2						33	390 00	360 00
Bureau	Princeton	199	189 00	124 00							57	81 00	81 00	27	555 00	555 00
Calhoun																
Carroll	Mt Carroll													8	200 00	200 00
Cass	Virginia	212	116 00	99 75	5	23 00	22 00							13	445 00	445 00
Champaign																
Christian	Taylorville	16	53 00	18 50												
Clark	Marshall	91	39 00	37 00										30	222 00	199 00
Clay	Louisville	35	50 00	16 00					15 00					8	236 00	40 40
Clinton																
Coles	Charleston	193	116 00	106 00	4	5 00	2 00							29	330 00	295 00
Cook																
Crawford	Robinson	156	66 00	57 00										22	500 00	187 00
Cumberland	Mojority Point	38	50 00	36 50										17	739 00	250 00
DeKalb	Sycamore	47	25 50	20 00				1	18 00	8 00				10	325 00	120 00
DeKalb	DeKalb	76	25 00	18 00										18	300 00	300 00
DeWitt	Clinton	134	74 00	28 00										8	600 00	162 00
Douglas	Tuscola	65	50 00	11 50										42	210 00	35 00
DuPage	Wheaton	130	105 00	70 50										14	240 00	230 00
Edgar	Paris	387	356 00	264 00										8	175 00	175 00
Edwards	Albion	78	66 75	31 75				17	22 50	19 50				14	230 00	230 00
Effingham																
Fayette	Vandalia	177	103 00	84 00										12	133 00	58 00
Ford	Paxton	169	133 00	44 65	1	15 00	75	5	18 00	7 85				10	615 00	233 00
Franklin	Benton	83	39 50	26 00										18	160 00	160 00
Fulton	Canton	440	371 00	85 16				7	45 00	11 00				18	795 00	335 00
Fulton	Avon	580	185 00	124 00	15	10 00	5 00	20	16 00	16 00	35	25 00	25 00	21	820 00	602 00
Gallatin	Shawneetown	69	55 50	42 00	1	11 00	2 00	15	5 00	5 00				37	1,055 00	1 015 00
Greene	Carrollton	395	307 00	273 50				8	20 00	20 00				34	185 00	185 00
Grundy	Morris	132	112 50	112 50		28 00								35	1,420 00	509 00
Hamilton																

Hancock																
Hardin	Elizabethtown	99	40 75	21 75	1	5 00	5 00		22 00					33	812 50	375 00
Henderson	Biggsville	162	48 25	46 00										19	478 00	265 00
Henry	Cambridge	299	81 00	51 00										44	1 730 00	1 480 00
Iroquois	Onarga	101	72 50	17 40				7	11 00	2 00				12	250 00	150 00
Jackson	Murphysboro	45	54 00	16 10										38	380 00	201 00
Jasper	Newton	6	80 00	30 00				8	20 00	8 00				40	800 00	570 00
Jefferson	Mt Vernon															
Jersey	Jerseyville	189	96 00	96 00				16	18 00	18 00				39	855 0	855 00
JoDaviess	Galena	150	123 50	66 75				5	38 00	24 00				7	230 00	175 00
JoDaviess	Warren	71	29 50	20 15										22	530 00	530 00
Johnson																
Kane	Aurora	132	98 00	26 80	23	77 75	14 00								500 00	435 00
Kankakee	Kankakee	88	42 00	27 00										16	200 00	144 00
Kendall	Bristol	67	80 00	19 80												
Knox	Knoxville	243	215 00	134 00				16	40 00	40 00	102	36 00	36 00	28	425 00	425 00
Lake	Libertyville	75	67 50	30 00										5	91 00	91 00
LaSalle	Ottawa	388	225 00	144 50				2	26 00	12 00				45	250 00	225 00
Lawrence	Lawrenceville	111	130 00	55 00					10 00		1	5 00	3 00	15	380 00	80 00
Lee																
Livingston	Fairbury	164	88 75	58 45	9	35 00	22 00							28	670 00	670 00
Logan	Lincoln	1 188	210 50	406 50	7	7 50	10 00	18	61 00	61 00				47	1 560 00	1,181 00
Logan	Atlanta	96	151 00	137 75	7	13 00	8 0	19	46 00	46 00				29	250 00	250 00
Macon	Decatur	119	52 00	30 20				10	30 00	30 00				24	540 00	364 00
Macoupin	Carlinville	259	185 50	143 00	3	32 00	16 00		22 50					43	1 240 00	1 105 00
Madison																
Marion	Centralia	277	144 25	118 75	2	3 00	3 00							25	185 00	185 00
Marshall	Wenona	507	394 00	344 00				15	28 00	28 00				28	815 00	711 00
Mason	Havana	167	60 00	50 00										22	510 00	435 00
Massac	Metropolis	50	60 00	38 00				8	12 00	12 00				9	220 00	200 00
McDonough	Macomb	269	1 7 95	108 75										37	2 500 00	2,040 00
McHenry	Woodstock	286	134 00	45 75	72	77 00	30 50									
McHenry	Marengo	104	63 50	28 25				10	19 50	16 00				39	198 00	126 00
McLean	Bloomington	206	135 00	57 50				29	33 50	33 50				17	475 00	397 25
Menard	Petersburg	191	200 00	86 80				11	45 00	30 00				48	1 030 00	997 25
Mercer	Aledo	340	140 00	120 00										10	200 00	200 00
Monroe																
Montgomery																
Morgan	Jacksonville	478	169 00	156 50	2	90 00	7 50							31	815 00	740 00
Moultrie	Sullivan	65	52 50	20 70										9	210 00	87 00
Ogle	Oregon	102	117 00	67 00	1			1	6 00	3 00	1			11	525 00	120 00
Ogle	Rochelle		113 00		4	15 00	5 00	5	19 00	19 00	5	5 00	5 00	26	525 00	525 00
Peoria	Peoria	262	207 00	103 00		50 00		6	117 00	52 75	20	97 00	97 00	31	850 00	745 00
Perry	Pinckneyville	54	45 50	22 50										43	507 00	453 50
Piatt	Monticello	48	37 00	29 00							3	72 00	6 00	42	875 00	762 00
Pike	Pittsfield	369	281 00	281 50										31	775 00	610 00
Pope	Golconda	32	39 50	26 75					12 00					12	210 00	45 00
Pulaski																
Putnam	*Hennepin	18	16 00	9 00				2	12 00					11	215 00	215 00
Randolph	Sparta	176	106 00	78 25										14	795 00	385 00
Randolph	Chester	224	175 00	122 00											1,100 00	945 00

Exhibit Illinois Agricultural Fairs, 1878—Continued.

County	Location of Fair	Textile Fabrics			Natural History.			Equestrianism			Education			Speed Ring		
		Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amount premiums offered	Amount premiums paid
Richland	Olney	111	6 00	47 00	1	5 00	5 00		8 00					40	776 00	661 50
Rock Island																
Saline																
Sangamon	Springfield	499	239 00	217 00	24	82 00	51 00	15	39 00	19 00				63	2,630 00	1,719 00
Schuyler	Rushville	188	117 00	94 00										20	540 00	400 00
Scott																
Shelby	Shelbyville	97	143 00	93 00										9	310 00	90 00
Stark	Toulon	680	328 00	287 00				16	19 00	19 00	20	10 00	10 00	3	115 00	115 00
St Clair																
Stephenson																
Tazewell																
Union	Jonesboro	241	115 50	86 25				3	22 50	15 00						
Vermilion	Hoopeston	243	113 00	89 00				2	16 00	8 00				10	462 00	325 00
Vermilion	Danville	124	83 00	60 00										42	1,700 00	950 00
Wabash	Mt Carmel	54	45 00	23 05				11	48 00	20 00				24	420 00	420 00
Warren	Monmouth	475	204 00	162 00										25	800 00	800 00
Washington																
Wayne	Fairfield	64	45 00	26 75				1	7 00	2 00				21	196 00	177 00
White																
Whiteside	Sterling	325	113 25	84 00	11	22 50	16 00							16	500 00	298 00
Whiteside	Morrison	224	124 50	112 50	28	34 00	34 00							17	210 00	210 00
Whiteside	Albany	152	22 50	16 00										26	111 00	108 00
Will	Joliet	163	122 00	98 00				11	46 00	46 00				25	630 00	365 00
Williamson	Marion	105	70 00	70 00				6	15 00	15 00				45	515 00	450 00
Winnebago	Rockford	252	343 50	282 50	15	48 00									1,225 00	1,174 00
Woodford																
State Fair		618	480 00	417 00	28	400 00	230 00				174	300 00	159 00			
Totals		18,017	$10,968 45	$7,891 53	284	$1,088 75	$438 75	342	$1,026 50	$988 75	418	631 00	432 00	1,939	$48,496 50	$36,193 90

Exhibit Illinois Agricultural Fairs, 1878

County	Location of Fair	President	Secretary	Miscellaneous Exhibit: Number of entries	Miscellaneous Exhibit: Amount premiums offered	Miscellaneous Exhibit: Amount premiums paid	Totals: Number of entries	Totals: Amount premiums offered	Totals: Amount premiums paid
Adams	Camp Point	W T Yeargain	S D Lewis	133	$185 00	$185 00	2,287	$2,466 00	$2,214 00
Alexander									
Bond									
Boone	Belvidere	Richard Barnes	A F Jenner	40		7 00	980	2 215 50	1,147 75
Brown	Mt Sterling	W H Brackenridge	John J McDonald				1 176	2 090 00	1 592 00
Bureau	Princeton	Justus Stevens	C P Bascom				1,010	2,902 00	2,359 00
Calhoun									
Carroll	Mt Carroll	Horatio C Blake	F T L Becker				709	1 257 35	849 80
Cass	Virginia	Morrison Graves	P W Rabburn	4	250 00	250 00	1 324	2 752 00	2 379 75
Champaign	Champaign	Daniel Gardner	H J Dunlap						472 59
Christian	Taylorville	W A Perkins	Wm A Goodrich				387	2 724 00	1,124 00
Clark	Marshall	George A Hippard	Walter Bartlett	30	60 00	6 00	472	1 055 00	780 00
Clay	Louisville	Geo W Sturtevant	James A Finch	23		12 00	274	1,119 00	368 90
Clinton									
Coles	Charleston	S D Dale	R S Hodgen				1,221	2,109 00	1 682 50
Cook									
Crawford	Robinson	P P Connett	Wm Swaren				936	1,733 00	872 00
Cumberland	Majority Point	Harlo Park	Wm Logan				240	1 895 75	712 00
DeKalb	Sycamore	L D Evans	B F Wyman	19		10 00	421	1 531 50	785 00
DeKalb	DeKalb	L M McEwen	S O Vaughn				780	1 090 00	637 00
DeWitt	Clinton	James A Wilson	Lewis Campbell	20		10 25	1 111	2,269 00	816 20
Douglas	Tuscola	John T Irwin	F M Friend	74	61 00	26 00	821	1 841 00	304 00
DuPage	Wheaton	H I Bush	A S Lander				545	1,296 00	975 25
Edgar	Paris	W O Wilson	Walter Booth	2	150 00	150 00	1,980	2,882 00	2 523 50
Edwards	Albion	Joseph White	Morris Emmerson	24	27 50	27 50	770	1,770 10	1,275 25
Effingham									
Fayette	Vandalia	James E Foster	D M Clark	81	21 00	16 50	1 166	1 075 75	741 75
Ford	Paxton	A Croft	G W Cruzen	36			675	1 822 00	700 00
Franklin	Benton	Jeremiah Neal	Wm C Phipps				501	1 141 50	747 00
Fulton	Canton	Inman Blackaby	C D Hoblitt	47			1 719	4 246 00	941 66
Fulton	Avon	D H Gorham	A J Churchill	134	43 00	43 00	2 462	2 680 00	1 938 00
Gallatin	Shawneetown	M M Pool	Jno L Robinson				646	2 584 00	1 961 25
Greene	Carrollton	Geo W Davis	N J Andrews				1,562	2 087 00	1,781 50
Grundy	Morris	W T Hopkins	E B Fletcher				801	2,932 30	1,657 30
Hamilton	. . .								

Exhibit Illinois Agricultural Fairs, 1878—Continued.

County	Location of Fair	President	Secretary	Miscellaneous Exhibit: Number of entries	Miscellaneous Exhibit: Amount premiums offered	Miscellaneous Exhibit: Amount premiums paid	Totals: Number of entries	Totals: Amount premiums offered	Totals: Amount premiums paid
Hancock									
Hardin	Elizabethtown	J M Ferrell	J A Lowery	2		$2 40	300	$1 574 50	$811 90
Henderson	Biggsville	Saml Hutchinson	R A McKinley	42		9 25	1,351	1 739 25	1 56 75
Henry	Cambridge	U C Gilbert	R H Hinman				1 425	3 706 00	2,912 00
Iroquois	Onarga	W A Boswell	F C Hall				783	1 355 50	476 40
Jackson	Murphsboro	R A Beasley	T B Hanks				453	1 521 00	660 85
Jasper	Newton	John Mason	G H Myers	50	$81 00	20 00	6[illegible]7	2 050 00	1,000 00
Jefferson	Mt Vernon	Samuel Gibson	John S Bogan				547	1,613 00	1,335 00
Jersey	Jerseyville	Henry Ryan	Morris R Locke	21	340 00	340 00	2 867	4 709 00	4 281 00
JoDaviess	Galena	R S Norris	Frank Bostwick	97	220 00	220 00	8[illegible]2	1 978 00	1 173 45
JoDaviess	Warren	Robert Hawley	Joseph Hicks				3[illegible]2	1,019 25	854 00
Johnson									
Kane	Aurora	Jonathan Tefft	W H Pease	13	52 00	4 [illegible]	8[illegible]0	2 319 25	985 40
Kankakee	Kankakee	Emory Cobb	Noel Brosseau			18 [illegible]	768	1 641 50	1 011 60
Kendall	Bristol	Wm T Henning	J M Gale				5[illegible]6	1 868 00	514 20
Knox	Knoxville	J H Lewis	J L Rynearson		103 00	33 00	1 769	2 943 00	2 300 00
Lake	Libertyville	R H French	Samuel Bradbury	86	25 00	9 95	[illegible]34	721 50	328 95
LaSalle	Ottawa	Chas H Green	A M Hoffman	1 826	1 625 00	621 50	3,599	4 865 00	2,689 50
Lawrence	Lawrenceville	J W Whittaker	D L Gold	37	50 00	10 00	350	1 214 00	463 00
Lee									
Livingston	Fairbury	J M Virgin	H L Bruce	75	25 00	25 00	1,5[illegible]8	3 364 50	2 647 90
Logan	Lincoln	Joseph Ream	A B Nicholson	84	58 00	8 25	3 766	4,240 75	3,814 50
Logan	Atlanta	Jno H Bell	C L Downey	75			2 765	2 592 00	1 968 75
Macon	Decatur	J H Pickell	Milton B Thomas	217			1 242	2 920 00	1 740 70
Macoupin	Carlinville	Geo J Castle	B P McDaniel	2	15 00	15 00	1,126	3 363 50	2,833 50
Madison									
Marion	Centralia	J N Kerr	M C Kell	135	20 00	12 00	1 373	1,815 75	1,425 25
Marshall	Wenona	John O Dent	Geo G McAdams				2 446	4 370 00	3,861 00
Mason	Havanna	Samuel Bivens	Sam F Kyle	31			1,065	1,891 00	1 281 00
Massac	Metropolis	J C Willis	James M Stone	22	43 00		196	725 50	478 00
McDonough	Macomb	W O Blaisdell	W H Hainline	20	25 00	25 00	1 341	3 965 80	3,122 50
McHenry	Woodstock	James Crow	A Bourne	24		10 75	1,310	1 552 25	450 75
McHenry	Marengo	A Jones	J S Rogers				859	1 472 25	691 00
McLean	Bloomington	T D Hartson	J T Didlake				1 811	3,5[illegible]5 00	1,737 00
Menard	Petersburg	Fred Wilkinson	J G Strodtman	120	115 00	103 00	1 486	3 747 00	2 153 25

Mercer	Aledo	A J Streeter	E B David				2 092	2 445 00	1,948 00
Monroe									
Montgomery									
Morgan	Jacksonville	N D Graves	J M Dunlap	1	200 00	200 00	2 355	3 843 50	3 278 75
Moultrie	Sullivan	J E Eden	S M Smyser				492	1 793 00	659 70
Ogle	Oregon	John W Hitt	John T Gantz	24	56 00	56 00	655	2 020 50	833 00
Ogle	Rochelle	Wm Stocking	Geo E Turkington				1 341	2,526 50	1,662 50
Peoria	Peoria	Jacob Littleton	Roswell Bills				1 494	4 248 00	3 177 75
Perry	Pinckneyville	Wm K Murphy	W S D Smith	20			390	1 259 50	848 00
Piatt	Monticello	J W Warner	H D Peters				362	2 098 50	1 583 50
Pike	Pittsfield	Lewis Ham	James H Crane	17		31 00	855	2 575 00	2 085 50
Pope	Golconda	James R Steagall	J E Y Hanna	65		10 10	323	849 50	491 85
Pulaski									
Putnam	Hennepin	W D Ham	P B Durley	52		8 00	654	1 202 00	808 00
Randolph	Sparta	John C Boyle	Wm F Foster				1 029	2 569 00	1 607 25
Randolph	Chester	Wm McAdam	Wm Schuchert	118	65 00	27 00	1 317	3 451 50	2 705 80
Richland	Olney	Isaac Nelty	A W Mace	6	16 00		730	2 564 00	1 817 00
Rock Island									
Saline									
Sangamon	Springfield	John A McClernand	W H Staley	58			3 497	7 491 50	5,752 50
Schuyler	Rushville	F E Cady	Jno C Scripps	5		32 25	774	2 204 00	1 442 50
Scott									
Shelby	Shelbyville	J A Durkee	George A Roberts				544	1 958 00	1 414 0
Stark	Toulon	Joseph D Rhodes	James Nowlan	11	259 50	151 45	5 180	3,324 00	2 334 70
St Clair									
Stephenson									
Tazewell									
Union	Jonesboro	Asa Harmon	Alvan Cook	160	21 50	60 55	1 419	1 893 40	1 581 75
Vermilion	Hoopestown	J A Cunningham	Wm Glaze	60	40 00	20 00	1 162	2 081 00	1 559 00
Vermilion	Danville	J H Oakwood	W S McClenahan	92			1 462	3 446 00	2 063 00
Wabash	Mt Carmel	Thos Stone	M D McClintock	178	200 0	94 00	555	2 0 9 00	1 033 50
Warren	Monmouth	J B Meginnis	Geo C Rankin	7	150 00	110 00	2,008	3 617 50	3 276 50
Washington									
Wayne	Fairfield	J T Fleming	N F Roberts	37	11 00	8 50	500	1 573 45	841 00
White									
Whiteside	Sterling	A A Terrell	C M Worthington	25	95 50	44 50	[illegible]	2 379 00	1 746 90
Whiteside	Morrison	James M Piatt	Ed J Congar	26	41 00	31 00	1 666	1 540 75	1 365 25
Whiteside	Albany	Samuel N Cowonger	J F Hipper	8	1 00		634	565 00	354 00
Will	Joliet	A A Francis	W T Nelson	15			923	2 166 00	1 591 00
Williamson	Marion	A N Lodge	L A Goddard	16		8 00	450	1 471 50	1 137 00
Winnebago	Rockford	John Lake	Hiram R Enoch	57	50 00	50 00	1 215	3 326 50	2,742 50
Woodford									
State Fair						249 34	5 363	18 268 00	15 236 34
Winter Meeting				33	1 105 00	453 00			
Total				4 769	$5 905 50	$3 950 74	109,167	$224 905 90	$154 585 59

Fair Associations, etc.—Continued

County	Location of Fair	Amount authorized as capital stock	Number of shares of stock issued	Amount of stock issued	Par value of share of stock	Number of shareholders or members	Cash value of real estate and improvements thereon	Number of volumes in library	Date of incorporation or organization	Time of holding Fair in 1878
Hardin	Elizabethtown	$875 00	175	$875 00	$5 00	75	$2,500 00	100	September 2 1870	September 18, 19, 20, 21
Henderson	Biggsville					375	4 000 00		1855	September 17, 18, 19, 20
Henry	Cambridge	10,000 00	396	1,980 00	5 00	67	10 000 00		September 12 1872	August 26 27, 28, 29 30
Iroquois	Onarga	10 000 00	352	3,520 00	10 00	130	2,500 00		November 13 1869	September 2, 3 4, 5, 6
Jackson	Murphysboro	5,000 00	200	5 000 00	25 00	60	5 000 00		August 4 1869	September 10, 11, 12, 13
Jasper	Newton						2,000 00		April 1 1871	September 24, 25, 26, 27
Jefferson	Mt Vernon									October 8 9, 10 11
Jersey	Jerseyville	20 000 00	513	12 825 00	25 00	427	19 986 00		April 13 1868	October 15, 16, 17, 18, 19
JoDaviess	Galena	25,000 00	2 200	11 000 00	5 00	200	10 0 0 00		1856	September 24, 25 26, 27
JoDaviess	Warren	10 000 00	500	10,000 00	20 00	45	4 000 00		1869	September 24 25, 26, 27
Johnson										
Kane	Aurora									September 3 4 5 6
Kankakee	Kankakee						3 000 00		1855	September 24, 25, 26, 27
Kendall	Bristol					300	4 000 00		1852	September 10 11, 12
Knox	Knoxville					306	5 500 00	40	1852	September 17, 18 19, 20
Lake	Libertyville						500 00		1851	September 11, 12, 13
LaSalle	Ottawa									September 2, 3 4 5, 6 7
Lawrence	Lawrenceville						800 00			October 2, 3, 4, 5
Lee										
Livingston	Fairbury	6,000 00	216	5 233 55	25 00	202	8 831 81		April 14 1876	September 10, 11, 12 13
Logan	Atlanta		295	5 900 00	20 00	193	10 000 00	50	1860	August 19, 20 21 22, 23.
Logan	Lincoln	12,100 00	480	9 600 00	20 00	190	12,500 00		July 20 1872	August 26 27, 28 29, 30, 31
Macon	Decatur						50 000 00	85	1857	September 1, 2 3 4
Macoupin	Carlinville								1857	September 3, 4, 5, 6
Madison										
Marion	Centralia	5 000 00	481	4,810 00	10 00	265	5 000 00	20	May 25 1876	October 1, 2, 3, 4
Marshall	Wenona	20 000 00	300	7 500 00	25 00	333	14 000 00		July 15 1871	October 1, 2 3, 4
Mason	Havana	10 000 00	54	5 400 00	10 00		5 000 00			September 17, 18, 19, 20
Massac	Metropolis	2,500 00	25	2,500 00	100 00	22	3 000 00		August 2 1867	October 16, 17, 18
McDonough	Macomb		63	3 150 00	50 00	63	10 000 00			August 27, 28, 29, 30, 31
McHenry	Marengo								January 1876	September 10 11, 12, 13
McHenry	Woodstock								1852	September 24, 25, 26, 27
McLean	Bloomington		200			190	25 000 00		1853	September 3, 4, 5, 6
Menard	Petersburg						5,000 00			September 3 4 5, 6
Mercer	Aledo									September 24, 25, 26, 27
Monroe										

Montgomery											
Morgan	Jacksonville	10,000 00	371	7,420 00	20 00	100	1,800 00		August 31	1851	September 9, 10, 11, 12, 13.
Moultrie	Sullivan								May 15	1858	September 10, 11, 12, 13.
Ogle	Oregon	10,000 00	944	4,720 00	5 00	79	4,000 00			1852	September 3, 4, 5, 6.
Ogle	Rochelle	10,000 00	600	6,000 00	10 00		5,500 00		September	1873	September 23, 24, 25, 26
Peoria	Peoria	50,000 00	500	50,000 00	100 00	18	67,000 00	200	April	1873	September 10, 11, 12, 13.
Perry	Pinckneyville						3,500 00		October 12	1872	October 2, 3, 4
Piatt	Monticello		724	3,620 00	5 00	394	4,800 00			1856	August 20, 21, 22, 23.
Pike	Pittsfield						10,000 00				September 24, 25, 26, 27
Pope	Golconda						1,000 00				October 3, 4, 5
Pulaski											
Putnam	Hennepin	2,340 00	117	2,340 00	20 00	244	2,000 00		February 23	1846	September 10, 11, 12
Randolph	Chester	5,000 00	500	5,000 00	10 00	76	9,645 00		August	1874	October 15, 16, 17, 18
Randolph	Sparta					171	8,000 00		September	1851	September 25, 26, 27
Richland	Olney									1856	September 17, 18, 19, 20
Rock Island											
Saline											
Sangamon	Springfield	25,000 00	599	14,975 00	25 00	502	22,000 00	50	January	1872	September 23, 24, 25, 26, 27.
Schuyler	Rushville					600	2,000 00			1856	September 24, 25, 26, 27, 28
Scott											
Shelby	Shelbyville		101	505 00	5 00	79	4,000 00			1855	September 24, 25, 26, 27
Stark	Toulon					1,800	6,000 00			1853	September 24, 25, 26, 27.
St. Clair											
Stephenson											
Tazewell											
Union	Jonesboro					1,156	4,000 00		December 22	1855	September 10, 11, 12, 13
Vermilion	Danville					329	10,000 00				September 16, 17, 18, 19, 20, 21
Vermilion	Hoopeston	10,000 00	326	3,260 00	10 00	127	3,500 00		July 26	1878	August 27, 28, 29, 30, 31.
Wabash	Mt. Carmel	1,500 00	183	915 00	5 00	85	1,000 00	10	November	1870	September 24, 25, 26, 27.
Warren	Monmouth						8,000 00		August 7	1852	September 9, 10, 11, 12.
Washington											
Wayne	Fairfield		538	2,692 92	5 00	35	3,000 00			1854	September 17, 18, 19, 20
White											
Whiteside	Albany					223			September 8	1875	September 11, 12, 13.
Whiteside	Morrison					1,048				1872	September 3, 4, 5, 6.
Whiteside	Sterling					1,142	2,000 00			1854	September 24, 25, 26, 27, 28
Will	Joliet	30,000 00	2,730	13,650 00	5 00	237	30,000 00		April	1869	September 9, 10, 11, 12, 13.
Williamson	Marion					550	3,500 00			1857	October 1, 2, 3, 4, 5
Winnebago	Rockford	8,000 00	1,553	7,765 00	5 00		20,000 00			1856	September 10, 11, 12, 13,
Woodford											
Totals		$368,085 00	21,698	$288,246 47	$922 50	16,246	$604,262 81	619			

Report of Pure-Bred Stock exhibited at the Fairs of 1878

County	Shorthorn Cattle					Hereford					Holstein					Devon				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County	
				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid
Adams	29	$150 00	$130 00	20	$80 00		$20 00										$20 00			
Alexander																				
Bond																				
Boone	44	57 00	57 00	29	35 00	1	57 00	$5 00	1	$5 00	1	$49 00	$5 00	1	$5 00	1	50 00	$5 00		
Brown																				
Bureau	64	416 00	401 00	64	401 00															
Calhoun																				
Carroll	18	97 50	97 50	18	97 50															
Cass	65	544 00	429 00	26	200 50															
Champaign																				
Christian	26	340 00	149 00	26	149 00															
Clark																				
Clay																				
Clinton																				
Coles	45	254 00	305 00	35	162 00															
Cook																				
Crawford																				
Cumberland																				
DeKalb Sycamore	17	62 00	42 00	3	6 00		62 00					62 00					62 00			
DeKalb DeKalb	6	50 00	16 00	6	16 00											8	50 00	20 00	8	$20 00
DeWitt	35	259 00	255 00	9	65 00															
Douglas	16	56 00	15 60			8	56 00	8 20								16	40 00	7 40		
DuPage																				
Edgar	53	318 00	313 00	27	210 00															
Edwards	24	76 50	58 50	21	53 50											6	76 50	21 00	6	21 00
Effingham																				
Fayette	15	48 00	48 00	15	48 00															
Ford	38	227 00	132 00																	
Franklin	4	42 00	16 50	4	16 50											7	38 50	38 50	4	20 50
Fulton Avon	85	200 00	200 00	15	12 00											11	68 00	44 00	11	44 00
Fulton Canton	9	90 00	33 00	9	33 00															
Gallatin	18	110 00	77 00	18	77 00															

Greene	32	186 00	133 00	26	55 00														
Grundy	22	59 00	59 00	3	6 00														
Hamilton										1	59 00	5 00	1	5 00					
Hancock																			
Hardin																			
Henderson	24	128 00	109 00	12	46 00														
Henry	17	102 00	91 00	7	45 00														
Iroquois	13	68 00	20 40			5	26 00	5 60		2	26 00	2 00				26 00			
Jackson	5	42 00	6 00	5	6 00										13	39 00	19 50	13	19 50
Jasper	15	170 00	60 00	8	15 00											23 00			
Jefferson	23	163 00	147 00	15	117 00														
Jersey																			
JoDaviess, Galena	76	202 00	104 00	65	83 95														
JoDaviess, Warren	15	75 00	57 00	15	57 00														
Johnson																			
Kane	35	90 00	36 00	35	36 00					15	90 00	16 00	15	16 00					
Kankakee	22	87 00	83 0	22	83 00														
Kendall	27	86 00	86 00	27	86 00	2	86 00				86 00								
Knox	42	131 00	112 00	42	112 00					16	64 00	64 00	16	64 00					
Lake																			
LaSalle	26	150 00	128 00	26	128 00					1	150 00	12 00	1	12 00	13	75 00	45 00	13	45 00
Lawrence																			
Lee																			
Livingston, Fairbury	46	258 00	258 00	3	15 00	19	163 00	122 00							11	163 00	70 00	11	85 00
Logan, Lincoln	58	392 00	364 00	27	80 00														
Macon	32	335 00	201 00	25	157 00														
Macoupin	33	435 00	340 00	33	340 00														
Madison																			
Marion	22	58 00	48 00	15	25 00										4	42 00	11 00	2	
Marshall																			
Mason		84 00																	
Massac																			
McDonough																			
McHenry, Woodstock	27	62 00	29 50	22	24 50					3	62 00	5 00	3	5 00		62 00			
McHenry, Marengo	32	56 00	52 00				56 00			1	56 00	5 00				56 00			
McLean																			
Menard																			
Mercer																			
Monroe																			
Montgomery																			
Morgan	50	370 00	358 75	24	192 50														
Moultrie	36	184 00		13															
Ogle Oregon	10	120 00	56 00	10	56 00					6	66 00	21 00	6	21 00					
Ogle, Rochelle	20	103 00	62 00	5	18 00		103 00			8	92 00	40 00					98 00		
Peoria	38	132 00	120 00					66 00		7	54 00	34 00				54 00			
Perry																	48 00		
Piatt	42	210 00	210 00	20	20 00														
Pike	51	443 00	267 00	44	221 00														
Pope																			
Pulaski																			
Putnam	14	64 00	50 00													64 00			

Report of Pure Bred Stock—Continued

County	Shorthorn Cattle					Hereford					Holstein					Devon				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County	
				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid
Randolph																				
Richland	16	$95 00	$95 00	4	$10 00															
Rock Island																3	95 00	60 00	5	60 00
Saline																				
Sangamon	44	500 00	4 95	9	50 00						12	140 00	70 00	12	70 00	2	120 00	20 00	2	20 00
Schuyler	19	135 00	104 00	7	55 00															
Scott																				
Shelby	18	200 00	184 00	10	96 00															
Stark	27	156 00	138 00	22	100 00			156 00									156 00			
St Clair																				
Stephenson																				
Tazewell																				
Union																				
Vermilion, Hoopeston	72	357 00	344 00	54	263 00	20	25 00	25 00												
Vermilion, Danville																				
Wabash		75 00										75 00					75 00			
Warren	34	320 00	315 00	11	105 50															
Washington																				
Wayne	9	65 00	36 00	8	31 00															
White																				
Whiteside, Albany	16	45 00	38 30													1	25 00	4 00	1	4 00
Whiteside, Sterling	38	159 00	148 00																	
Will	20	54 00	37 00	20	37 00						7	54 00	22 00	7	22 00					
Williamson																17	61 00	51 00	15	44 00
Winnebago	24	55 00	55 00	21	42 00	2	55 00	6 00	2	6 00		55 00				3	55 00	9 00	3	9 00
Woodford																				
State Fair	111	450 00	450 00			47	450 00	385 00			57	450 00	425 00			33	450 00	360 00		
Totals	1961	$11,098 00	$8 361 70	1060	$4 468 45	104	$1159 00	$778 00	3	$11 00	137	$1690 00	$726 00	62	$220 00	151	$2066 00	$931 20	94	$392 00

Report of Pure-Bred Stock—Continued.

County	Ayrshire					Jersey					Thoroughbred Horses					Roadster				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County		No of entries	Amount premiums offered	Amount premiums paid	Owned in County	
				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid				Number of entries	Am't premiums paid
Adams							$20 00									8	$175 00	$175 50	8	$125 00
Alexander																				
Bond																				
Boone						16	49 00	$29 00	16	$29 00	4	$40 00	$8 00	3	$3 00	33	40 00	34 00	27	21 00
Brown																				
Bureau						5	54 00	20 00	4	20 00						63	156 00	149 00	63	149 00
Calhoun																				
Carroll																5	61 00	50 00	5	50 00
Cass											65	117 00	117 00	48	67 00	21	72 00	72 00	14	34 00
Champaign																				
Christian											1	111 00	5 00	1	5 00					
Clark																				
Clay																				
Clinton																				
Coles						6	69 00	33 00	6	33 00										
Cook																				
Crawford																				
Cumberland																				
DeKalb, Sycamore	13	$62 00	$45 00				62 00						72 00			69	95 00	82 00		
DeKalb, DeKalb											4		10 00	4	10 00	20	50 00	42 00	20	42 00
DeWitt											4	93 00	15 00	3	5 00					
Douglas																4	155 00	21 50		
DuPage																				
Edgar																				
Edwards						2	76 50	7 00	2	7 00										
Effingham																				
Fayette																				
Ford																				
Franklin						8	21 00	21 00	5	14 50	12	85 50	52 00	10	40 00	13	30 00	30 00	8	20 00
Fulton, Canton																17	101 00	15 00	17	15 00
Fulton, Avon																25	76 00	76 00	10	30 00
Gallatin						4	61 00	15 00	4	15 00	12	155 00	80 00	3	25 00					

Report of Pure Bred Stock—Continued

Location of Fair	Ayrshire.					Jersey					Thoroughbred Horses.					Roadster				
				Owned in County					Owned in County					Owned in County					Owned in County	
	No of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Number of entries	Amt premiums paid
Greene																				
Grundy						1		$5 00	1	$5 00	7	$51 00	$42 00	7	$42 00	37	$118 00	$106 00	23	$56 00
Hamilton											2	76 00	8 00	2	8 00	20	72 00	34 00	20	34 00
Hancock																				
Hardin																				
Henderson																				
Henry	2	$60 00	$12 00	2	$12 00	1	$128 00	15 00	1	15 00										
Iroquois	3	26 00	2 80			5	26 00									111	181 00	58 80		
Jackson																				
Jasper						4	23 00	10 00	4	10 00						12	60 00	28 00	6	18 00
Jefferson						6	67 00	25 00	6	25 00	28	508 00	431 00	6	65 00					
Jersey																				
JoDaviess Warren																7	15 00	5 00	2	5 00
JoDaviess, Galena																7	230 00	175 00	7	175 00
Johnson																				
Kane	37	90 00	36 00	37	36 00															
Kankakee						1	87 00	8 00	1	8 00										
Kendall		86 00					86 00									25	94 00	74 00	25	74 00
Knox	4	64 00	22 00	4	22 00						14	116 00				12	116 00	88 00	12	88 00
Lake																				
LaSalle	7	75 00	25 00	7	25 00						3	105 00	20 00	3	20 00	72	100 00	100 00	72	100 00
Lawrence																				
Lee																				
Livingston, Fairbury						24	163 00	145 00	2		32	185 00	143 00	18	64 00	83	171 00	149 00	62	118 00
Logan, Lincoln											7	90 00	38 00	3	19 00	54	85 00	78 00	40	54 00
Macon						27	160 00	96 00	19	60 00	14	185 00	111 00	8	42 00	24	80 00	48 00	15	18 00
Macoupin											12	72 00	64 00	12	64 00	45	160 00	151 00	25	60 00
Madison																				
Marion						20	34 00	32 00	10	21 00						18	57 00	41 00	13	24 00
Marshall																				
Mason						17	73 00	54 00			4	81 00	8 00			15	510 00	470 00	4	175 00
Massac																				

McDonough																								
McHenry, Marengo	2	56 00	2 60				12	58 00	32 00										14	45 00	32 00			
McHenry, Woodstock		62 00					4	62 00	6 50	4	6 50	3	10 00	6 66	1									
McLean																								
Menard																								
Mercer																								
Monroe																								
Montgomery																								
Morgan												3	120 00	20 00	3	20 00	107	1,034 00	955 00	35	82 00
Moultrie												2	30 00		2						
Ogle, Rochelle		62 00						52 00									25	112 00	112 00	11	46 00
Peoria		54 00					20	135 00	135 00	8	54 00	21	155 00	91 00	7		55	158 00	158 00	27	80 00
Perry							7		24 00	7	24 00	3	77 00	18 00	1	8 00					
Piatt												4	30 00	25 00	2	20 00	12	75 00	47 50	8	27 50
Pike									4								9	775 00	610 00	5	230 00
Pope																					
Pulaski																					
Putnam												19	66 00	50 00							
Randolph																					
Richland	1	95 00	15 00				10	95 00	90 00	4	45 00										
Rock Island																					
Saline																					
Sangamon		140 00					3	140 00	110 00	13	45 00	31	205 00	190 00	22	105 00	72	205 00	200 00	45	85 00
Schuyler												2	150 00	15 00							
Scott																					
Shelby																					
Stark		156 00					2	156 00	20 00	1	10 00	9	112 00	112 00			71	284 00	284 00	49	68 00
St. Clair																					
Stephenson																					
Tazewell																					
Union																					
Vermilion, Hoopeston													34 00				10	462 00	325 00	2	
Wabash		75 00						75 00					105 00								
Warren								78 00				5	67 50	67 50	4	67 50	70	412 50	330 00	49	215 00
Washington																					
Wayne																					
White																					
Whiteside, Albany		25 00						25 00													
Whiteside, Sterling							12	67 00	53 00								56	79 00	54 00		
Will							10	54 00	45 00	10	45 00						20	72 00	50 00	20	50 00
Williamson							3	61 00	9 00	3	9 00	8	85 00	54 00	5	34 00					
Winnebago		55 00					1	55 00	3 00	1	3 00	1	68 00	15 00	1	15 00	38	68 00	68 00	34	68 00
Woodford																					
State Fair	53	450 00	440 00				63	450 0	425 00			22	430 00	320 00			7	4 0 00	480 00		
Totals	122	$1,693 00	$790 80	50	$95 00		324	$2820 56	$1467 50	132	$504 00	358	$3815 00	$2208 16	179	$743 50	1423	$7319 59	$6086 10	783	$2436 50

Report of Pure-Bred Stock—Continued.

County	Norman and French Draft					Clydesdale and English Draft					Cotswold Sheep					Leicester and other Long Wools				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid
Adams																22	$31 00	$31 00	19	$31 00
Alexander																				
Bond																				
Boone						7	$40 00	$15 00	6	$12 00						16	19 00	17 00	16	17 00
Brown																				
Bureau						12	180 00	102 00	12	102 00						26	94 00	76 00	26	76 00
Calhoun																				
Carroll						5	22 50	22 50	5	22 50	3	$4 00	$4 00	3	$4 00	1	4 00	2 50	1	2 50
Cass											22	66 00	66 00	12	36 00					
Champaign																				
Christian																5	18 00	14 00		
Clark											2	13 50	8 10							
Clay																				
Clinton																				
Coles						2	33 00	16 00	2	18 00						8	29 00	23 00	8	23 00
Cook																				
Crawford																				
Cumberland																				
DeKalb Sycamore											4	29 00	15 00	4	15 00	5	29 00	6 00	5	6 00
DeKalb, DeKalb	30	$50 00	$48 00	30	$48 00						16	30 00	14 00	16	14 00	22	30 00	18 00	22	18 00
DeWitt																8	28 50	22 50	2	2 00
Douglas	18	111 00	11 00													4	13 00	2 60		
DuPage																				
Edgar																1	10 00	10 00	1	10 00
Edwards											4	16 50	10 50	4	10 50	7	16 50	12 0	7	12 50
Effingham																				
Fayette											20	10 00	10 00	20	10 00					
Ford	1					1	27 00	20 00												
Franklin																9	18 00	18 00	9	18 00
Fulton, Canton	18	101 00	24 00	18	24 00											4	49 00	13 00	4	13 00
Fulton, Avon	8	98 00	90 00	4	38 00											10	22 00	22 00		
Gallatin	2	124 50	27 00	1	7 00															

Greene																31	26 00	26 00	26	21 00
Grundy	8					5					9	15 00	15 00	9	15 00	16	15 00	15 00	16	15 00
Hamilton																				
Hancock																				
Hardin																				
Henderson	49					32					11									
Henry											6	22 00	22 00	6	22 00					
Iroquois	30	92 00	30 80													5	8 00	1 20		
Jackson																3	13 50	4 50	3	4 50
Jasper	2	88 00	36 00	2	12 00						12	28 00	12 00	4	6 00	2			2	4 00
Jefferson											15	21 00	21 00	15	21 00					
Jersey																				
JoDaviess Warren											6	18 00	18 00	6	18 00					
JoDaviess, Galena	1	52 00	42 50								8	43 50	20 00			5	43 50	20 00	5	20 00
Johnson																				
Kane	8	33 00	13 20	8	13 20											10	36 00	12 00	10	12 00
Kankakee	3	54 00	15 00	3	15 00															
Kendall						7	94 00	63 00	7	63 00						9	21 00	34 00	9	34 00
Knox	11	116 00	104 00	8	83 00	9	116 00	96 00	5	60 00						31	38 00	38 00	20	17 00
Lake																				
LaSalle	64	165 00	100 00	64	100 00	63	224 00	121 00	63	121 00										
Lawrence																				
Lee																				
Livingston, Fairbury	68					16					13	15 00	15 00	13	15 00	2	15 00	4 00	2	4 00
Logan Lincoln	22	97 00	61 00	16	41 00						9	31 00	26 00	2	4 00					
Macon											23	65 00	39 00	14	25 80					
Macoupin	37	108 00	105 00	29	91 0						9	31 00	31 00	9	31 00					
Madison																				
Marion	7	38 00	38 00	7	38 00											14	12 00	12 00	14	12 00
Marshall																				
Mason	9	76 00	44 00													7	25 00	23 00		
Massac																				
McDonough																				
McHenry Marengo	13	57 00	18 00								7	21 00	12 00			3	21 50	4 00		
McLean																				
Menard																				
Mercer																				
Monroe																				
Montgomery																				
Morgan											32	78 00	78 00	22	64 00					
Moultrie						5	30 00		3		14	67 00		6						
Ogle Rochelle						32	102 00	106 00	9	25 00	14	36 00	25 00	14	25 00					
Ogle Oregon						1										25	29 00	29 00	13	8 00
Peoria																29	53 00	53 00		
Perry																				
Piatt																2	15 00	4 00	2	4 00
Pike	2	30 00	30 00	1	10 00											9	52 00	38 00	9	38 00
Pope																				
Pulaski																				
Putnam											3	12 00	11 00				17 00			
Randolph																				

Report of Pure-Bred Stock—Continued

County	Southdown					American Merinos					Spanish Merinos and other fine wools				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid
Madison															
Marion											3	$12	$10	3	$10
Marshall															
Mason	3	$29	$10			6	$29	$21							
Massac															
McDonough															
McHenry, Marengo	8	21	5								12	21	17		
McHenry, Woodstock	10	46	15	7	$10						29	46	20	19	8
McLean															
Menard															
Mercer															
Monroe															
Montgomery															
Morgan	14	78	60	9	57										
Moultrie															
Ogle, Rochelle	16	36	37	16	37	15	41	41	11	39					
Ogle, Oregon	2	29	6	2	6										
Peoria						17	53	53			25	54	54		
Perry															
Piatt		15									4	15	7	4	7
Pike	9	76	72	9	72						8	52	52	8	52
Pope															
Pulaski															
Putnam		17									5	17	15		
Randolph															
Richland	3	20									3	20	10	3	10
Rock Island															
Saline															
Sangamon	61	78	78	30		16	78	72							
Schuyler	9	35	28	4	15										
Scott															
Shelby											10	39	34	10	22
Stark						2	42	7	2	7					
St Clair															
Stephenson															
Tazewell															
Union															
Vermilion															
Wabash		16													
Warren	4	30	20	4	20	20	30	30	16	30					
Washington															
Wayne	1	34	2	1	2						8	34	22	8	22
White															
Whiteside, Albany	3	6	5	3	5		6								
Whiteside, Sterling	15	32	27								6	32	7		
Will						20	22	12	20	12	20	22	15	20	15
Williamson						5	12	8	5	8	6	12	10	6	10
Winnebago	9	12	12	2	8						13	26	14	8	8
Woodford															
Total	349	$1 204	$740	209	$466	175	$556	$415	96	$210	291	$869	$594	175	$329

Report of Pure-Bred Stock—Continued.

County.	Berkshire Swine					Poland China					Chester White					Essex				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid
Adams	47	$63 00	$63 00	13	..	20	$63 00	$63 00	.	.	.	.					..	..	..	.....
Alexander	.		.		....									.	.	.	.	..		....
Bond	.													..					..	....
Boone	11	37 00	16 00	11	$16 0	22	37 00	24 00	14	$13 00	20	$37 00	$27 00	20	$27 00	11	$37 00	$31 00	.	....
Brown																			..	....
Bureau	12	59 00	40 00	12	40 00	46	59 00	59 00	46	59 00	10	59 00	40 00	10	40 00	6	26 00	26 00	6	$26 00
Calhoun		..										....	..	.		.				
Carroll	15	33 50	32 00	15	32 00	10	33 00	26 00	10	26 00	8	33 00	26 00	8	26 00	3	33 60	10 00	3	10 00
Cass	26	102 00	87 00		.	33	102 00	97 00			11	102 00	62 00	.	...		.		..	....
Champaign	.											....		.	.	.	.	.	..	....
Christian	14	108 00	95 00	14	95 00	4	108 00	27 00	4	29 00	.		.	.	.	..	.	.	..	....
Clark	8	60 00	15 00	8	13 00						.	.			.	.	.	.	..	.....
Clay	..	...	.	.	.	.	.			.		.			.	.	.	.	..	.....
Clinton	.										.			....	.	.	.	..	..	....
Coles	17	84 00	60 00	17	60 00	21	84 00	71 00	21	71 00	.	.		.			.	.	..	....
Cook		... ..	..	.	..		.	..		..		...	....	..	.	..	..	.	.	...
Crawford		... ..								..			.		...	.	.		.	.....
Cumberland			.		.					..		.							..	..
DeKalb, Sycamore	12	29 00	8 00	12	8 00	16	29 00	29 00	7	14 00					.	.	29 00	.	..	...
DeKalb, DeKalb		30 00	.			16	30 00	30 00	16	30 00	12	30 00	22 00	12	22 00		..	.	..	.
DeWitt	29	9 00	71 00	14	36 00											.	...		..	.
Douglas	24	48 00	14 00		.	17	18 00	10 00			7	48 00	5 00	..		.	.	.	.	....
DuPage	.														..	...			.	.....
Edgar	17	81 00	71 00	17	71 00	39	81 00	81 00	39	81 00	.	..	..	.				..	.	.....
Edwards	19	49 00	39 00	19	39 00	9	49 00	26 00	9	26 00		.	...	.	.	..	..		.	.....
Effingham		..									.	.	..	..	.		..		.	....
Fayette	16	14 00	14 00	16	14 00	15	14 00	14 00	15	14 00	.		..	.	...			.	.	..
Ford	10	95 00	...		.	20	95 00		30	80 00						.	.	..	...	..
Franklin	1	15 00	3 00	1	3 00	1	16 00	3 00	1	3 00	2	16 00	5 00	2	5 00				..	....
Fulton, Canton	12	73 00	12 00	12	12 00	71	73 00	26 00	71	26 00	11	73 00	13 66	11	13 00		.	.	..	....
Fulton, Avon	30	78 00	70 00	2	8 00	.			..		75	78 00	78 00	25	24 00	.		.	..	.
Gallatin	12	49 00	42 00	12	42 00	5	46 00	14 00	5	14 00	2	43 00	5 00	..		.				

Report of Pure Bred Stock—Continued

County	Berkshire Swine					Poland China					Chester White					Essex				
	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Amt premiums paid	No of entries	Amount premiums offered	Amount premiums paid	Owned in County: Number of entries	Owned in County: Am't premiums paid
Greene	19	$60 00	$60 00	19	$60 00						21	$60 00	$60 00	21	$60 00					
Grundy	19	42 00	26 00	19	26 00	24	$42 00	$33 00	24	$33 00	4	42 00	11 00	4	11 00					
Hamilton																				
Hancock																				
Hardin																				
Henderson	9	63 00	40 00	9	40 00	21	63 00	60 00	21	60 00										
Henry	7	42 00	38 00	7	38 00	20	42 00	42 00	29	42 00	8	42 00	42 00	8	42 00					
Iroquois	24	34 00	14 00			14	34 00	14 00			8	34 00	11 00							
Jackson	6	15 00	8 00	6	8 00															
Jasper	6	68 00	14 00	6	14 00	12	68 00	20 00	12	20 00										
Jefferson	12	36 00	32 00	11	32 00	21	53 00	45 00	20	37 00										
Jersey																				
JoDaviess, Galena	16	60 00	18 00	8	18 00	17	60 00	31 00	12	20 00	1	60 00	5 00	1	5 00					
Johnson																				
Kane	19	46 00	18 00	19	18 00	22	46 00	18 00	22	18 00	21	40 00	18 00	21	18 00	8	46 00	8 20	8	8 20
Kankakee	13	64 00	37 00	3		33	64 00	61 00	22	53 00	5	64 00	23 00	3	13 00					
Kendall	11	60 00	56 00	11	56 00	10	60 00	44 00	10	44 00		60 00					60 00			
Knox	35	50 00	50 00			18	50 00	50 00	13	50 00	19	50 00	50 00	7	16 00					
Lake																				
LaSalle	8	51 00	10 00	8	10 00	46	51 00	37 00	46	7 00	15	51 00	35 00	15	35 00	13	51 00	43 00	13	43 00
Lawrence																				
Lee																				
Livingston Fairbury	21	80 00	58 00	16	44 00	19	36 00	26 00	19	26 00	2	36 00	10 00	2	10 00	4	36 00	16 00	4	16 00
Logan Lincoln	29	68 00	86 00	15	37 00	19	68 00	54 00	5	4 00										
Macon	53	95 00	57 00	20	9 00	93	98 00	58 80	61	25 00	23	39 00	27 40	15						
Macoupin	34	51 00	51 00	34	51 00	36	51 00	51 00	36	51 00		34 00								
Madison																				
Marion	22	35 00	35 00	15	10 00	8	35 00	22 00	8	22 00										
Marshall																				
Mason	21	52 00	52 00	11	19 00						11	52 00	48 00							
Massac	12	16 00	8 50	12	8 50															
McDonough																				

McHenry, Marengo	14	33 00	30 00			67	33 00	33 00			5	33 00	11 00									
McHenry, Woodstock	11	28 00	12 00			18	28 00	10 00	18	10 00	5	28 00	5 00									
McLean																						
Menard																						
Mercer																						
Monroe																						
Montgomery																						
Morgan	47	84 00	84 00	23	35 00	62	84 00	84 00	51	30 00	32	84 00	80 00	18	65 00	1	84 00	10 00	1	10 00		
Moultrie	12	64 00		7		27	101 60		15													
Ogle, Rochelle	10	46 00	31 00	4	15 00	27	46 00	43 00	27	43 00												
Ogle, Oregon	8	22 00	20 00	8	20 00	4	22 00	14 00	4	14 00												
Peoria	21	57 00	52 00	7	10 00	50	57 00	57 00	9		25	57 00	57 00	5	10 00							
Perry	11	27 00	23 00	4	4 00	5	27 00	14 00	5	14 00		27 00										
Piatt	16	67 00	67 00	16	67 00		67 00						67 00									
Pike	17	58 00	52 00	17	52 00	25	103 00	103 00	25	103 00	14	58 00	49 00	14	49 00							
Pope																						
Pulaski																						
Putnam	11	39 00	39 00			27	39 00	30 00			14	39 00	39 00									
Randolph																						
Richland	18	68 00	65 00	6	5 00	26	68 00	68 00	8	8 00	7	68 00	54 00	1	6 00							
Rock Island																						
Saline																						
Sangamon	140	125 00	125 00	22	5 00	99	125 00	125 00	33	65 00	66	125 00	125 00	5								
Schuyler	17	85 00	44 00	17	44 00	23	85 00	69 00	23	69 00												
Scott																						
Shelby	27	58 00	58 00	19	50 00	13	93 00	66 00	5	14 00												
Stark	17	36 00	36 00	4	10 00	19	36 00	36 00	19	36 00	2	36 00	10 00	2	10 00	12	36 00	36 00	12	36 00		
St Clair																						
Stephenson																						
Tazewell																						
Union																						
Vermilion, Hoopeston	14	70 00	63 00	7	5 00	33	70 00	67 00	16	15 00		46 00					46 00					
Wabash		33 00					33 00					33 00										
Warren	15	142 00	122 00	6	22 00	24	142 00	142 00	22	142 00												
Washington																						
Wayne	3	58 00	14 00	3	14 00	11	58 00	29 00	11	29 00												
White																						
Whiteside Albany		15 00				5	15 00	10 00	5	10 00		15 00					15 00					
Whiteside, Sterling	25	67 00	49 00			20	54 00	54 00														
Will	39	53 00	30 00	39	30 00	43	53 00	41 00	48	41 00	13	53 00	30 00	13	30 00							
Williamson						7	42 00	32 00	7	32 00												
Winnebago	18	36 00	30 00	36	16 00	25	34 00	31 00	25	31 00	8	36 00	22 00									
Woodford																						
State Fair	114	270 00	260 00			289	270 00	270 00			113	270 00	270 00			58	270 00	270 00				
Totals	1352	$3 927 00	$2 826 00	659	$1 391 76	1752	$3672 00	$2703 09	1015	$1732 00	600	$2197 00	$1437 00	243	$537 00	116	$769 00	$450 00	47	$149 00		

APPENDIX.

horse power than by that finer attachment to the cervical portion of their bodies. Look at us, located as we are in the valley of the great Father of Waters, in a country rich in the component parts of that which goes to produce and sustain plant life, perhaps the richest in the known world—if we are to believe the reports of Mr Cobden, an English gentleman who visited this state at or about the time the Illinois Central railroad was being chartered and built, and who made or caused to be made a careful chemical analysis of specimens of the soil from various parts of the state His report to his fellow countrymen (if our memory serves us) was, that the soil of Illinois which he examined contained more of the principle necessary to produce and sustain vegetable life than that of the valley of the Nile, which has long been considered the richest in the known world English capitalists, believing his statement to be true, eagerly sought the stock of this railroad, and it was soon built after the charter was obtained

We now see how fully time has verified Mr Cobden's statement made many years ago, of the richness of our soil, by the amount of actual productions of the state, the marketing of which has become a serious desideratum with the farmer at the present time

It would appear advisable that the farmer should condense the products of the farm as much as possible before sending the same forward, as he thereby reduces the amount to be paid for freight.

It costs, at present rate about one-eighth of a crop of wheat to freight it from Chicago to New York In flour it would cost less, besides having bran and shorts to feed stock Corn costs nearly one-third of the crop to freight it as above, but in starch, glucose or glucose syrup, would cost less; also if put into pork or beef, but would cost very much less if fed to cows and put into butter and cheese. Butter costing only one-thirty-sixth and cheese about one-seventeenth part of the product to freight as above

We estimate that the production of butter in the United States the present year will reach in round numbers about 653,000,000 pounds Of this amount, the people of this country will undoubtedly consume about 6.0,000,000, and we shall probably export about 23.00,000

We also estimate the production of cheese to reach in round numbers about 315,000,000 pounds Of this amount the United States will consume about 180,000,000, and we shall export about 135,000,000 pounds.

England imported in 1875, 181,418,496 pounds of butter, at a cost of 24 cents 9 1-10 mills per pound. Of this amount the United States furnished only 6,260,827 pounds, which was sold in that country for 23 cents 6 1-10 mills per pound, being about 1 1-3 cents less than butter brought from other nations imported the same year The largest importations in that year were from Germany, Holland, Denmark and France The home production the same year was estimated fully equal to the whole importation This holding true, the consumption of butter in England for 1875 would be a fraction over 14½ pounds per head for the entire population The importation of cheese into England in 1875 was 182 158 256 pounds. Of this amount this country furnished 101,010,853 pounds; being considerably more than half of the amount imported

This importation, large as it may appear, is claimed by the writer in the Encyclopædia Britannica to be but a small part of what is actually consumed by the people of that country. The amount imported as stated above would give to every man, woman and child of England about seven and a half pounds per annum This would be very nearly twice the amount used per capita in this country

Our exportation of butter and cheese being almost entirely to England, perhaps it may not be amiss for us to take a general survey of her financial prospects for the future, as well as her home prospects for a continuation in the production of dairy products Her imports in 1876 over all exports amounted to about $873,000,000 The present year they must much exceed that of 1876 Should this state of things continue in the future it will only be a matter of time when her resources will become exhausted, as no people or country, however rich they may be, can long continue to live, financially, with a heavy annual balance of trade against them.

The census returns of England and Wales for 1861 show that 1,883,652 persons were engaged in agricultural pursuits in that year, and in 1871 the number had decreased to 1,447,-481, a dropping out of 386,171 persons from this pursuit in ten years Nor is this all The decrease of cattle for the three years ending in 1877 was 374,686 head This shows a large falling off, but shall we wonder at it when we come to know that the average estimated annual rental value of the whole lands of the country is given at fifteen dollars and four cents per acre! Now the question is, can English dairymen afford to pay the above rental price of land and continue in the dairy business, so long as we are allowed to put our dairy goods upon their market for only about one cent per pound additional cost to their value in our markets? We anticipate the answer that may be made right here that our cheese is not as good as their home manufactured. We can but admit the fact—for it is without doubt a fact—that within the last two or three years we have sent them much poor butter and cheese

It is also a fact that we have sent them much that will compare favorably with their home make or other importations In verification of this statement as to the richness of our own cheese, compared with other brands found in the English market, you will please allow us to give an analysis of some six different brands of cheese reported in the Encyclopædia Britannica, a work of English production, which should be perfectly reliable in statistics and facts given so far as that country is concerned Therefore we quote from it the following:

ANALYSIS

Brand.	Water	Caseine.	Fat.	Milk Sugar	Asht. Salt.
Stilton (supposed to be night's cream to morning's milk	20 27	33 45	43 98	. ...	2 20
Double Gloucester.	33.41	27 75	32 69	2 23	3 92
Cheddar, full cream..... ...	30 32	28 18	35 53	1 66	4 31
American full cream	27 29	25 87	35 41	6,21	5 22
Parmeson (skimmed)	27 56	44 08	15 95	6 69	5 72
Neufchatel (reported wholly cream cheese	36.58	8 00	40.71	15 80	0.51

It is much to be regretted that the different markets which we select to place our butter require so much difference in make Butter salted for American consumption would hardly be tolerated in the English market

Cheese made for the Southern trade requires to be flat or thin, while a flat cheese is not wanted in the English market Therefore our dairymen are required to make a different sample of each of these staples to suit the market for which it is destined, and if a surplus on one of these markets the other may take it but very reluctantly, if at all

In our recent visit to New York city we found that market not over-stocked with either prime butter or cheese, while at the same time we found a large accumulation of a poorer quality of both Perhaps much of this poor article will hardly be sold at any price—saying nothing about a remunerative price at all

Now, in our judgment, the continuation in the manufacture of such an article is suicidal to the best interests of the dairymen of this country In justice to ourselves we should put nothing upon a foreign market but what is strictly prime

France, with a less acreage of land than Texas, exported to England in 1867 $11,000,000 worth of butter, while the whole United States only exported $1,184,367 worth While France is largely increasing her export trade in butter to England, we have fell back from $7,234,173 worth in 1865, to only $4,424,616 in 1867 No doubt there is a cause for this large dropping off with us, and it behooves us to look to this matter with an eye singly to its importance

On motion of C. C Buell, it was voted to accept the president's address, and that the same be printed in the proceedings

It was now voted to take up the topics as arranged in the programme, and proceed to their discussion

Topic No 1—"Grasses; the best varieties as adapted to our soil and climate"—was taken up, when the following paper by W J. Burdick, of Whitewater, Wis., was read:

W J BURDICK'S PAPER

"Improvement of Grasses and Grass Land by the System of Surface-culture"

The value of good drainage cannot be overestimated in promoting the health, wealth, happiness and prosperity of mankind In the physical organization of the earth those means were not overlooked by its Divine Author, in external and internal formation, whereby man can improve it to suit his peculiar views and interests Hence the success of the improvement of grass land will depend upon the degree of its drainage

One of the most formidable obstructions to securing good drainage is mill-dams located on the natural base-line, which cause serious damage to agricultural interests in their locality In our personal examination of grass land, we have seen thousands of acres of good agricultural land that in its present condition is almost entirely worthless, caused by the check of natural drainage In the discussion of this topic we shall assume the position that good drainage is the first requisite, in agricultural pursuits, to secure success The first important work in the improvement of grass lands is to secure good drainage Hence, to know where to locate drains is a question for careful study and close examination, to secure the best results for the least expense To secure good drainage, it is very important to obtain a good outfall to the base-line, which will greatly increase the value of the cross-sectional drains We are aware of the fact that we cannot give a general formula how to drain all classes of land by the same class of material, as the surface of the land is very diversified in its formation, varying from the bluff-rolling, to almost level plains We would recommend the V-formed open drains as being superior to those of other forms The V form will make a stronger bank, also the particles of alluvium will not form at bottom of the ditch because it will increase the velocity of the volume of water flowing through the ditch. The size or dimensions of a drain will depend upon the volume of water you wish it to convey, and also the condition of the surface of the land that you wish to drain Hence these two conditions will require a careful examination before locating a drain

After securing good drainage, our next work will be in preparing the soil for the introduction of the grass seed. It is a well established fact that we are a strong exponent of the system of surface-culture for the improvement of grass lands, in all of the various soils and conditions of the surface I am well aware of the fact that I am contending with a time-honored institution—the use of the plow in the improvement of grass land—but nevertheless we are willing to submit our experience in this class of work, and also the specimens of grasses grown under our supervision, for the inspection of those present. We will note a few of the many reasons why we believe the system of surface-culture of grass land to be superior to the use of the plow, to-wit: That we are obeying nature's law, in this system of work, in preparing the soil to receive the grass seed. This position is demonstrated in the biblical history of grass, as we learn there the agricultural imple-

ments were very rude in their construction, and meant to perform the work required of them to do in preparing soils to receive the different varieties of seed, which was only surface work. Yet what a luxuriant growth they obtained!

We will now pass over the intervening space of time, to more recent date in the history of the cultivation of grass by the system of surface-culture Look at its history in England, Holland, Germany, Scotland, and other progressive countries of Europe! Land that has not been plowed during the past 200 years, the rental value increasing in proportion to its age Even in many of the New England States, grass land that the virgin soil has never been broken by the plow produces the very richest quality of grasses grown in these states

We will now notice our experience in the improvement of grass land in the North-West In the year 1853 the writer located near the city of Oshkosh, Wis Heard the general complaint about the growing of tame grasses, and it was an admitted fact that Wisconsin was never designed to become a dairy state of any importance, or even the respected state of Illinois It is wonderful to contemplate the change that has taken place since that period to this time, relating to the dairy interest, of which you are all informed as to its progress We know by experience that the looser we make the soil with the plow we increase its capacity to receive heat, which will aid rapid evaporation of moisture, so very essential to promote a strong growth of vegetation, especially that of grass, which was one of the principal causes in the loss of the young seeding in the early settlement of the North-West Again, another reason for the loss was this: Chemical analysis of wheat and timothy hay show that they require about the same elements from the soil to sustain a vigorous growth Here the farmer was disappointed in the unsatisfactory growth of his favorite grass which was timothy The writer has a thorough agricultural education one naturally adapted to the growing of grasses Here on the old homestead was my instruction in the system of surface-culture in the improvement of grass lands At the time of writing there is grass land that has never been broken with plow, upon the old farm, yielding a very generous supply of grass, very good in quality About eight years ago was commenced the work of improving the grass land in the North-West, with the view of securing a smoother surface for the working of machinery requisite in securing a crop of hay Our work was slow and expensive Only a few men could afford the expense, as the cost ranged from $5 50 to $10 per acre for the labor and other expenses added thereto After we had leveled the surface of the land our attention was called to obtain the variety of grasses adapted to the various conditions of the soils.

Allow me to introduce specimen grasses, grown on all conditions of soil of the North-west, also by the system of surface culture I will mention a few of the many varieties of grasses that are successfully grown in the Northwest I shall mention all of the English names that I can apply to them: Timothy, red-top, bent-top, white or brown-top, orchard, foul meadow, meadow fescue, rough meadow, sheep fescue, meadow oat grass, Italian rye grass, floating fox-tail, sweet scented vernal grass, Kentucky blue grass, spear grass, blue grass, eragrostis, etc

Among the family of clover we have the following list: Alsike, common June, alfalfa, mammoth Italian, white and crimson

All the grasses that I have mentioned are adapted to the soils of the states of Wisconsin and Illinois, if they were introduced and cultivated From this list we select the combination of grass seed suitable for all class of soils, as we are seeding lands by the system used in England with a large variety of grass in mixture—this has often been explained in previous writings. Since one year ago last June I have been located in Craw Fish Valley engaged in the work of superintending the improvement of grass lands with the latest improved machines, of which I will submit the following report My first client, C J Millard, manager of the Rock Lake creamery, located about two miles south of the village of Lake Mills Cost of labor, $1 85 per acre Land very rough in many parts Varieties of grass and seed used--timothy, red-top, F M. clover sown in the spring My next client was H. C Drake, proprietor of the Drake cheese factory The cost of labor was less than the work for Millard. The cost of seed the same; also the same combination—Alsike and red clover, sown in the spring My next was Messrs Wm and Geo Everson (patrons of the Rock Lake creamery). Cost of labor about $1 50 per acre; cost of seed the same as Drake's, also same combination I was very busily engaged in this class of work till about the first of December, cultivating and seeding several hundred acres of grass land I wish to notice the result of the work, in the yield of grass those parcels of land produced also the value of good draining The young seeding of Mr Drake's meadow was very light caused by excessive moisture in the soil, produced by the mill-dam across the Craw Fish river, which is causing very serious damage to a large tract of excellent agricultural lands. This meadow of Mr Drake's has been cultivated and seeded to tame grass I will say that I seeded about nine acres of Hungarian stubble land, and cut about two tons per acre the first mowing, on the farm of Drake's I have a sample of the grass grown on that thirty-three acres which I wish to call special attention to the rapid development of this seeding, caused by good drainage, as the soil on the Everson lot was considered to be inferior to Drake's lot. Hence here is a proposition demonstrated, that the growth of cultivated grasses will depend upon the condition of the drainage of the soil, as the yield of hay on Messrs. Everson's was about one and one-half tons per acre, while on Drake's it was about three-fourths of a ton per acre. Again, the thickness of the sward will be in proportion to the dryness of the soil

I am pleased to report to your respected secretary that we have meadow land that was cultivated and reseeded under our personal supervision that is yielding three tons of good nutricious hay per acre; also pastures that are producing good grass in sufficient quantities to supply all the feed necessary for neat stock, at the rate of one acre per head, through the feeding season. Those pasture lands are reseeded with a large variety of grass seed, adapted to suit the condition of the soil We find the first stratum to be nature's combination, as it has received the grasses from the rains and also from decayed vegetation, which it has utilized to promote a rapid growth, as is demonstrated by the specimen in our collection

I object to the use of the plow, as it destroys many valuable varieties of grasses that are not reseeded, which greatly increase the value of these lands in promoting the in-

terests of the dairyman and stock-grower. Again, when the low grass land has been broken with the plow, it is very uncertain when you will re-establish another sod of any strength and vigor, as the grass will yearly decrease until it is entirely gone, and its place is taken by obnoxious weeds, which is very often demonstrated in various sections of the Northwest. When we introduce the cultivated grasses into the soil of the native grass land by the system of surface culture, the young plant has the protection of a portion of the native grass until it gains sufficient growth to withstand the changing influence of the atmosphere to which it is exposed. Again, when the surface of the soil is preserved by the system of surface-culture there is a steady decay of the mature grass, and it becomes a plant food for the young plant of grass, till they are entirely destroyed by the cultivated ones. Again, I object to the use of the plow, as it is more expensive than by the system of surface-culture with the aid of improved machinery even if the results were alike, though we claim the preference in favor of the system of surface-culture

We will now review the second division of this topic with the comparatively and relative of the grasses in our collection. Those grasses that are adapted for permanent pasture land are those which will reproduce undershoots or blades at the base of the column or stem, when cropped off With Kentucky blue grass, or June grass, red-top, orchard, meadow fescue white-top, pod annie, pod compspa or blue grass, sheep fescue, eragrostis peclurica hordim jubatim Italian rye grass, sweet-scented vernal grass, foul meadow—all of the above mentioned varieties are grown in the states of Wisconsin and Illinois, therefore they are acclimated to the condition of the soil and climate

For upland pasture the orchard grass will produce the largest per cent of feed in a given time I have known it to grow at the rate of an inch to every twenty-four hours, for several weeks. This grass is a great favorite with the men who have tested its values, in our section of the state The meadow fescue is a very valuable grass and is well adapted to the upland also to the lowlands; if they are well drained This grass does not mature as soon as the orchard. My specimen is from eight first seedings The sheep fescue is very much like meadow fescue in its growth The Italian rye grass is doing very well in our vicinity, which can be seen by the specimen we have in our collection. Agroslus Alba or white top is a very valuable variety of grass, which grows quite extensively in our lowlands, which produces a large yield of feed much sought after by all kinds of stock. The foul meadow grass cannot be too highly prized for the lowlands. This has become very popular within the past few years, as it is giving universal satisfaction to all who have introduced it into their lands It flourishes as well on quite moist land, and yields often eight tons per acre The past fall I have cultivated and reseeded one hundred acres of lowland for A R. Earl Esq, one of the farmers in the town of Astalon, Jefferson county Used a strong proportion of the foul meadow in the combination of grass seed; also mixed with the combination of grass seed about sixty bushels of dry, unbleached ashes Demand for this valuable grass seed is very rapidly increasing each year All of the varieties of grass that we have named are adapted for the dairy stock grower's farm

For meadow seeding I would change the varieties in the combination, selecting those that mature at the same time I would recommend the cultivation and reseeding on old meadow lots in the months of August and September, to secure a good yield the following season I would use a prime dressing of a prime compost manure while cultivating the soil thereby thoroughly mixing them together Then sow the combination of grass seed and harrow lightly with a smoothing harrow I am now referring to upland meadows. Lowland meadow I cultivate soon as the grass is mown, even in the month of July, but do not sow any grass seed until about the 20th of August Sow seed until the 15th of October. Continue the work of cultivation until there is a low temperature, so that the seed will not germinate; then resume the sowing of the grass seed and let it freeze with the soil and grow in the following spring

Pasture lots on upland I cultivate as soon as the frost is out of the ground in the spring of the year; reseed and hold it as a reserve lot until about the 15th of June, when it will be in splendid condition to use producing feed the balance of the season without injury to the young seeding Lowland pasture lots I cultivate and seed in the fall of the year, mowing the first two crops of hay, thus it will become a very strong sod, so the feeding of stock will not injure it In relation to the quantity of grass seed sown per acre, that will depend upon the condition of the soil, also the variety English authority gives that when a lot of land is well seeded, each square foot of land produces one thousand one hundred healthy grass plants I am using thirty-six to forty quarts of mixed seed per acre, with good results American seeding will average about one hundred and seventy-five plants per square foot I observe that when I use a heavy seeding I am not annoyed with a strong growth of obnoxious weeds, and also will have an improved sod on the surface of the land which has been cultivated

I will now state that all varieties do not mature at the same time, as perchance there are some persons present that would claim the grasses were very much crowded while they were growing The combination is formed by mixing the earlier and the later varieties together, which will cause a steady growth of grass through the entire season, thus affording a generous supply of feed for the use of all classes of stock

I have often been asked this question: "What length of time will those lands remain as you leave them, when they are cultivated?" also, "What will be the condition of the grass a few years hence?" I will answer the first question by saying that will depend upon the way in which they are used If the stock is allowed to run over the pasture lots when the soil is quite wet it may produce roughness on the surface, but generally they will remain smooth. In relation to the last question, that will also depend upon how they are cared for Over-feeding on grass land is very injurious to the longevity of grass, especially on meadow lands. I believe if the farmer would not allow stock to feed from his meadow land on any condition whatever that it would increase the yield of grass 25 per cent. When the first blades form in the early part of spring they are very essential in promoting the growth of the later-growing blades and when they are cropped by the feeding of stock, the effect is as injurious in retarding the growth of the plant as though it had been severely frozen, which will cause a light yield of grass.

Again, I would recommend early cutting of grass, to maintain a vigorous growth, as in that condition the plant has stronger vitality to nourish the forthcoming blades This position is demonstrated in all of the early-mown meadows, compared to those cut later in the season Look at the beautiful rich dark green color of the early-mown blades; what a giant-like appearance by the side of the poor, pale, feeble look of those later cut. The timothy plant is very peculiar in its growth, and being a bulb plant, it is naturally adapted to a dry soil, which can be seen by the various specimens of the plant in our collection of grasses The bulb is nature's store-house of moisture from which the column draws a supply, increasing its demands until it is fully matured, leaving the roots of the plant very weak in their vitality, which will cause a premature decay Hence the timothy plant was designed by nature for dry soils and early clipping to secure a strong and vigorous growth I would not recommend the sowing of timothy on low, moist land, as this retains a greater degree of moisture through the hours of night, and when the scorching rays of the sun come in contact with excessive moisture on column it will cause the fungus on roots, which greatly decreases its nutritious value for winter feed Hence here is a serious mistake with many in sowing timothy on lowland meadow as the base of their seeding, for there are other varieties of grasses that will grow most luxuriantly in that class of soil and withstand the attack of the fungus Among those varieties foul meadow is the most prominent in maintaining its deep green color through the entire season of its growth Also meadow fescue and orchard grasses are not easily affected by excessive moisture of the soil I am well satisfied that timothy is far more superior as a pasture grass than for hay, as it is No. 7 in the grade list of grasses for its comparative value. And again, timothy will loose about 55 or 60 per cent in curing, while the orchard will loose only 29 per cent , meadow fescue 31 per cent , foul meadow 44, rough meadow 31, and red-top 48 per cent

I wish to call the attention of dairymen to this fact: that timothy is not so valuable a grass as it is accredited to be I suspect that this position will draw out criticism from those who believe that timothy is superior to all other varieties of grass In relation to alfalfa, it is thoroughly tested that there are many thousands of acres of land in Wisconsin upon which the alfalfa will become the leading crop for the dairy herd I have examined prime fields of the alfalfa growing in many sections of the State The class of soil that is natural for the growth of alfalfa is a rich loam underlaid with clay-mixed sand subsoil, and that stratum resting upon gravel formation, as the alfalfa will root very deep, and this class of soil is thoroughly underdrained in its natural formation. In regard to this clover I will submit the following report: The sapling or mammoth variety is a very valuable clover, if it is properly cultivated, for several reasons, to-wit: 1st It has a porous root which will withstand the influence of the alternate thawing and freezing which is so disastrous to the common red clover 2d It produces a very large amount of feed per acre I would recommend feeding this clover until about the 10th of June Then cut a crop of hay or seed Under this treatment you will produce a very prime quality of hay, as the columns will not be coarse, as though it had not been cropped off. 3d For a fertilizer I would allow it to grow till the blossoms are formed Then summer fallow the field. Alsike clover is a valuable plant. The alsike is fast becoming a favorite with those that have tested its merit I have used a large amount of this seed the past two years in the combination of seeds I use about one pound of seed per acre I have a specimen of this clover that measures five feet in length I am using it quite freely in the lowland. It is a very hardy plant, and does not winterkill like common red clover, as it has a fibrous root I would not sow this seed upon too dry soils, as it dwarfs in its growth The Italian clover is doing very well in this section of this State It has a very soft stem; is not harsh as the common red clover. I have a specimen that I selected the past summer that measures five feet in length

Trifutim incarnatum, or crimson clover --I am not entirely satisfied what the result of experiments with this clover will be, as it will require another season to determine its value The value of the common red clover is too well known to retain it, except it can be cultivated so that it will produce a fibrous root This result is produced with this system of surface-culture by sowing seed on cultivated sod land This is the reason why this clover so long retains its strong vitality. I have examined this clover that the seed was sown ten years ago. This clover will grow a root in proportion to the condition of the soil. If the soil is pulverized very fine and deep, it will grow a very long, deep root I do not sow any grass seed with the cereal grains. I highly cultivate the stubble land if the crop has been secured Sow the combination of grass seed from the 15th of August until the 15th of September, excepting clover; leave that to be sown the following spring I have seeded stubble land by this system and cut two tons of hay per acre from it next season The principal cause of losing young seeding when sown with spring grain is, that it is too tender to withstand the scorching effect of the hot sun when the grain is removed; also the soil is in a very porous condition, as the following experiment has demonstrated, to-wit: When the thermometer indicated 70° atmospheric heat, in clay soil it would indicate 130°, sandy soils 107°, alluvial or black soils 110° In highly fertilized soils the degree of heat is still higher. Again, I find the degree of heat varies in proportion to the drainage of the soils. On the lowest or cold lands, and on those affected by cold spring water, the vegetation is the latest in growing Hence this experiment demonstrates two potent facts, to-wit: 1st The absolute necessity for good drainage 2d, The lowland is the most natural soil for the production of grass Also we have the varieties adapted to these soils; which are giving the very best satisfaction to all the parties that are engaged in the improvement of this class of soils

In relation to the condition of the lands we are engaged in cultivating, I say that we are prepared to improve all classes of land, from the very rough to the very smooth surface even the willow-growing land, at a cost less than to subdue them by the system of plowing Also, we have in our collection eighteen different varieties of grass seed; therefore we are prepared to give formulas of the combinations of grass seeds to suit all conditions and varieties of soil, as we have thoroughly tested these grasses and know their value in comparative and relative forms

In conclusion I will submit the following proposition for the consideration of those interested in the improvement of grass land, to-wit: That the improvement of the grass land is the first work to insure a higher quality of the dairy product. 2nd, Tha

the value of the products of the cow is in like ratio to the quality and quantity of the food and the care she receives from the herdman 3d, That the grass lands, when they are properly drained, cultivated and reseeded with a combination of grass seed adapted to the soil, will yield a greater revenue than any other class of land, in ratio to their expense. 4th, That in work of improving the grass land by the system of surface-culture, we promote the growth of many very valuable varieties of grasses, adapted for the use of the dairy herd, which would greatly enhance the value of those lands that are destroyed by the system of plowing and are not replowed in the reseeding. 5th, In the reseeding of these lands with a combination of grass seed, adapted to suit the different varieties of soils we increase the yield from 30 per cent to 200 per cent per acre

C C Buel was a new beginner come here to learn His farm was composed of a variety of soils, mostly prairie, and of a sandy loam - most too sandy, and was mostly reclaimed from wet soil His upland produced clover freely; his lowland, Kentucky blue grass, or June Grass which are one and the same His upland was all right- he could handle that, but the lowland was what caused him trouble Cattle would punch it up or "bog it" Had for a year or two put his harrow onto it and then seeded with red top and timothy. This year mowed it and got a good crop Could not say as this plan would do for all lands Had read much of the writing on the grass question, but thought all statements should be made based upon actual experience or definite knowledge

E H Seward said that the question of grasses was at the bottom of our success as dairymen; no dairy region could prosper where good grasses could not be produced There were a great variety of soils in this state; they must all be treated differently. Often the same eighty needed several kinds of treatment, and as many kinds of seeds Red-top wants a wet soil Clover needs a deep soil, as it roots very deep Much of our lowland was now coming into red-top by a process of natural seeding More seed should be used, not wait for nature to seed for us Timothy seems the most natural grass to our soils, and will thrive on any vegetable loam soil- but that it easily winter-kills, is a mistake. It is the fall drought which kills it; it is a bulb plant and must have plenty of moisture Clover is the best, all considered; it yields the most abundantly, will produce more milk than timothy, but not quite as good for pasture as red-top, or blue grass It is a mistake not to try to make our land yield more grass; there is too much loss; we must use more fertilizers. Top dressing is good for grass Clover not only yields a great profit, but it is in its nature a fertilizer, preparing the way for other crops especially for oats and corn; we should all raise more--should alternate with our crops And all should remember that grass was the farmer's "backer"

C C Buell said some recommended muck for a top dressing for grass lands Some was good, some worthless.

Mr Johnson wanted to know as to the expense of making new land by the use of muck He lived on the prairie, where help at from $15 to $23 per month made it too expensive; could see no profit in it

C C Buell could not tell as to exact cost or profit of using muck. He knew that to make all the barren places in our farms productive would remove many "eye sores" He believed the wet places should be made dry, and the poor ones productive, regardless of cost

E H Seward thought, as to muck, it might not pay for the first year, but for a term of years it would certainly pay

J R McLean, if not for a bad cold, could "knock the socks" off from Buell and Seward He did not blame Seward for drawing out his "muck holes," but he did not believe there was any pay in it Clover and timothy are natural to our soil We did not as a rule use seed enough He used to use his thumb and finger to scatter the seed, but now his son runs the farm and he takes a whole handful Red-top is not fit for anything; cows can't eat it they would require a new set of teeth each year. Cannot rely upon it in mid summer, will not stand drought

D C Scofield: How is it for hay?

McLean: It is poor for anything He knew of one piece of land in the East which had produced hay for 38 years, and when he had last saw the hay it stood as high as his chin - this was natural seeding of mixed grasses

D C Scofield inquired as to the proper time to cut timothy for hay—whether in the blossom or seed

McLean did not admit that in the blossom to be the best time; thought a little riper to be the best time

C C. Buell inquired if any dairyman had any experience with the browse as feed for dairy cows None had

E H Seward: Had never kept a record of the falling off of tame grasses to a normal condition This could only be determined by a record for a period of years

A member asked McLean as to the best time to cut hay to produce the most milk

McLean said his experience was to cut in the dew or milk of the grass, the best time.

C C Buell thought this a very important question, and should be thoroughly discussed, so as to get more light upon it

Seward thought the statement of McLean, that hay should not be cut until the seed had fallen, should not go out to the public, the fact was, timothy had two blooms—first a white, second, a blue bloom—and should be cut in the first bloom, at least for him. Scofield was reminded of an apple: it was good only once, to-day and not to-morrow. If a farmer has 100 acres to cut, he cannot cut it all in a day or two When must he cut, green or ripe?

Seward thought this a common sense question It could not all be cut in one day, therefore some would be a little too green and some a little too ripe, but the average just right

A member thought the farmer who had 100 acres of hay, had better have 50 acres of it in corn.

C H Larkin wanted to know about the two blossoms on timothy; did not understand it, thought all plants were allowed only one blossom each year

Seward: It may not be true that timothy has two blossoms. The first might change color; perhaps it did.

A member had lived on the Western Reserve; used small teams, plowed shallow and raised poor crops. New settlers came in with large teams, plowed deep, and sowed clover, and were soon raising large crops. Believed clover the cheapest fertilizer the farmer had. If cut early it would seed itself. As to cutting early or late, he believed McLean's theory correct. It should be really ripe, but for milk it should be cut green.

S W Kingsley inquired as to the mode of using clover as a fertilizer

C H Larkin wanted to know which he could do the cheapest, draw manure three-fourths of a mile or use clover

O C Diggins: Would draw the manure. To plow in was the general mode practiced where clover was used

W W Bingham thought to spread on a coat of dry straw and plow in was as good as a coat of manure After some further discussion of this question—

No 2—"Soiling; is it profitable to the dairymen of this state? and to what extent?" was taken up

W W Bingham: Could not say much on this question from experience Had farmed but little Knew a man who kept sixty cows on one hundred acres of land by means of soiling His own plan was to drill in his corn for fodder; used five bushels of seed per acre and obtained a very large yield of fodder Also used oats cut green for soiling Sowed three bushels per acre. Found this to be good feed for soiling Kept his cows in the stanchions twenty hours out of the twenty-four. Kept twelve cows on six acres of pasture. His farm contained thirty-six acres Intended to keep twenty cows as soon as his farm was in a little better condition Raised nine acres of corn. Bought five tons of bran. The remainder of the feed was raised on the farm. Of good milk, twenty-one pounds was sufficient to make a pound of butter.

C. H. Larkin. Knew nothing about it at all. Had no definite figures to give. His neighbor, Judge Wilcox, had made experiments. Hoped he would be here

C C Buell had supplemented his pasture by feeding clover. After second growth often fed rye and corn

C H Larkin: Did you feed it as a matter of necessity or for profit?

Buell Fed it for profit

Dr Tefft: Said the French farmers made more money than we from their land and dairies Many only used ten acres; and upon these small tracts, highly cultivated, they supported large families; and even laid up money. But economy, of course, had to be practiced.

Mr Johnson: Doubted if fancy farming paid.

On motion of R. P McGlincy, the chair appointed E. H. Seward, W. W. Bingham and Benj. Cox as a financial committee

On motion, adjourned to meet at 9 a. m. to-morrow morning.

WEDNESDAY, 9 A. M.

Convention called to order as per adjournment, and the discussion of the programme resumed

Topic No 3—"The supply and demand of dairy products; and their future market" Upon which question Capt W H. Stewart read the following paper:

CAPT. W. H STEWART'S PAPER.

Without going into statistical details of what the supply is—or the demand, which I suppose is measured by the consumption, since there appears to be quite an accumulation of surplus,—it is sufficient to know that whatever may be the demand, for a long time at last, the supply will be readily forthcoming

The real question that crowds upon us is, how we may reduce the cost of the supply and increase the demand and consumption I have no doubt that by a practical adoption of the rule of the "survival of the fittest"—by carefully weeding out from the heard all animals which do not come up to a high and advancing standard, and then, by warm and healthful quarters, generous and appropriate feeding and kind and careful handling, the cost of the raw material may be very much reduced and value increased

The question has frequently arisen, whether we would not soon get to indulging our American right and custom of riding a good thing to death And the present stagnation and accumulation seems to excite suspicion that the dreaded time had arrived Yet I think not, except accidentally The general pinching financially compels the shortening of sail and running close. When cheese is used as an extra—a luxury—it goes by the board, and the drying up of the million little streamlets, each in itself of no great consequence but in the aggregate works a fearful shrinkage of the main river For this, as dairymen we can only wait and hope for the better time coming. While waiting, one thing—which I think is a greater, a more persistent and permanent cause of staving consumption—we may study with profit if it leads to action: Kinds of food generally are a matter of taste Taste can be educated Its gratification grows into a habit Habit makes a necessity, and the necessity makes a permanent, steady demand. The English, especially the poorer classes, are said to be a cheese-eating people They have been educated to it. Doubtless at first, through hard necessity, to fill an alimentary requirement caused by a want of flesh beyond their reach But the habit being formed, its gratification has become a necessity Hence the absorption of the wonderful quantity of cheese that is annually shipped from our growing surplus. Situated as we are, there is little danger of our being forced to the use of cheese for the want of meat, yet the taste can be very much sharpened by tickling the palate and coaxing the frequent and general use by constant satisfaction.

Since the commencement of the factory system of making cheese, the use of it in this country, in this very way, has grown to magnificent proportions It was evidently a goose that was laying golden eggs But instead of nuturing and encouraging the goose to increase her laying, I fear many of us have gone for the goose as the old story reads—

we have stolen her fat for butter and left the eggs tasteless, worthless, saleless, godless. For two or three years the manufacture of skim cheese has increased to a sad extent; and what is the outlook?

Just at our sorest pinch, when financial stagnation is pressing us with a heavy hand, our goods are tramps, roving about everywhere begging for a market A shrug of the shoulders, and the stereotyped phrase of the price current, "Only fine mild cheese at all saleable," and that slow and pulseless, is the polite rejoinder Shading prices even are received with unmeaning indifferennce

Go and interview for a little while the retailers in the city. Say they—"We have been unable to obtain a respectable article of cheese, and a little goes a great way. No one wants it, and it doesn't pay to keep much" And so it is all over. The president of this society and of the Elgin board of trade where millions of cheese are annually sold—is compelled to import from outside districts cheese for his own consumption that is fit for his table, his board of trade for the sale of skims being unable to furnish it

The fact is, the home consumption notwithstanding the low price, has fallen off at least seventy-five per cent., while it ought to have at least twenty-five per cent increase. This alone would bring to the trade wealth and happiness More than this, by sending the life-blood of the cheese to the butter-tub, you not only kill the cheese trade but smother the butter trade as well If with the new year we can with honest money content ourselves, with honest goods as well, I can only see fair sailing in the immediate future

Capt Stewart further said that oleomargarine was better for butter than skim cheese was for cheese He deprecated the making of skim cheese It was not fit for use, and should not be tolerated

John Colett: Was at Quincy a few days since Saw in a grocery store a good, full-cream cheese Asked the grocer where he obtained it He said, New York. We cannot get good cheese in Illinois They do not make it They skim too much

The Chair said they do not skim as much in Wisconsin, but find a ready sale for their cheese

T McD Richards: Thought every factory should brand their cheese, as to quality If skimmed, sell it for just what it was. As long as there was a demand for skim cheese factorymen would make it They could make more money by so doing, but if all products could be sold upon their merits, no harm would be done

E H Seward. Thought an inspector might be appointed to brand cheese, as well as to inspect wheat A law should be passed to regulate the whole matter It should be sold for just what it is worth As it now is, Illinois cheese stands as low as any state in the Union, and is still on the down grade Wisconsin makes better cheese than we do, and finds a quicker sale Illinois factorymen skim as long as they can see anything to skim

R. P McGinev: Did not think a law could be passed in Illinois to regulate the matter Had had experience in this matter Endeavored to have a bill passed preventing the adulteration of milk; but the average legislator could see no harm in the adulteration of this natural food, and so the bill could not be passed The dairy business did not receive the attention it ought to. No one paid any attention to it. But as long as the buyer gave within one-half cent as much for "skims" as for full-cream cheese, they would be made

John Collett: Thought the whole thing could be remedied It was a lack of consumption Not an over-production People cannot get what they want, so will have none. If all could be branded both skims and full-cream, a change would soon be felt

Col Wilcox: Wanted to know if the branding system had ever been tried And with what result Said the man who made a good plow, a good mower or a good machine of any kind, was not slow to put his name upon it Why not on cheese as well It seems to him the only remedy. Every manufacturer of any article for domestic use will not fail to brand his goods And, not only this, but will have his private trade mark, which in many instances is of great value.

Collett said if this could be done, Elgin would support as large a butter and cheese house as any city in the United States Could keep twelve salesmen constantly employed.

Seward: Thought selling on commission should be discouraged.

Collett. Dealers did not understand it They, as a rule, were not judges of dairy goods. They often do not know what they buy or sell

W. W Bingham thought dairymen had missed it by trying to make money at the sacrifice of reputation The factory plan leads to this All want to make as much money as possible The dividend plan is wrong It is quantity they are all striving for, and not quality The more the factorymen makes the more money he gets Times are hard: as they improve, prices will also improve

Wilcox: All was in a lump Individuality was entirely swallowed up. No person who makes a good article should be ashamed to brand it. He bought his butter from a private dairy Could not afford to buy creamery butter

S N Wright: Thought the whole matter rested with the dairymen themselves They should demand full-cream cheese, and compel factorymen to make them. Dairymen should not take a gallon of milk to a factory where skimmed cheese is made. And all should be sold on the board of trade

Dr Tefft: Said there was a demand for skim cheese and it would be made

B Cox: Had one month's milk made into full-cream cheese Received 4 cents per gallon for his milk, while he was receiving 4 65 for skims and butter

Seward thought the factorymen encouraged the making of all butter and skimmed cheese, as the figures showed there was the most money in it for them The factorymen made six cents and the dairymen lost fourteen cents per 100 lbs, which is all wrong

Collett said if the watch factory put their goods up in the market as watches only, they would never have a reputation. But they brand their goods "Elgin Watches," which is a guarantee for their quality There is honor among business men as well as others, but many are poor judges and do not really know what they handle. If all were branded then the poor judge would know as well as the good judge, just what he was handling. All other goods for domestic use never fail to be branded, as to their merits Why not cheese as well as soap?

Mr. Barnett, of Sugar Grove, sold all his cheese for nine cents Made all full-cream cheese People came to the factory to get it. Had no trouble in selling all he made

A member: How about your dividends?

Mr. B . They are not as large as paid by the factories where skim cheese is made

A member: That tells the story

Mr Barnett received milk only once per day Often it came to the factory sour; but he never failed to make a good cheese

This statement was received with some degree of allowance by the dairymen present, who had been taught to believe that when milk was once sour it was impossible to manufacture good cheese from it

J R. McLean. Said he and other dairymen had devoted nineteen years to learn how to care for and handle milk He now learned with astonishment that all this time had been worse than wasted, for here comes the information from Sugar Grove, that *sour milk* is as good as sweet milk for cheese-making As to skimmed cheese, he bought some full-cream, took it home his family would not touch it, but wanted some of that *mild* cheese--which means skimmed There is no disputing the fact that it would often bring more in the market than full-cream It is ready to eat as soon as made; not so with full-cream The trouble is, the supply is too great; it is enormous, amounting to as much as one-half our national debt Our Canadian neighbors come to Elgin, learn to make skimmed cheese, go home and make and ship to England $8,000,000 worth, and have hardly begun yet He here read from the Utica *Herald* as to number of cows, exportation, etc

Scofield: Wanted to know the amount of skimmed cheese, in pounds, equal to the cheese which would satisfy an Englishman?

Collett: Thought, although cheap, it was in the end an expensive food, as it cost so much for medicine to work it off

Judge Wilcox: Took exception to some of the figures read by McLean, from the Utica *Herald* They were preposterous and should never be given to the public

Dr Tefft: Said those figures were made by J. H Real, and should be received with great allowance

On motion, topic No 4 was passed, and

Topic No 5 was taken up "What per cent depreciation is there in keeping up a dairy from all sources?" This eminently practical question seemed to stagger many of the dairymen present, as no sensible answer could be given, only by one who had kept his accounts exactly, and this is what few dairymen do

S W Kingsley. Knew the shrinkage was huge, but just what per cent he could not say; but at least twenty-five per cent. Did not keep figures as to the loss or cost

McLean: Said it was a new topic, no one had thought of it before but gone ahead regardless of cost or profit. It should be thoroughly investigated and a definite conclusion arrived at, as the business is a constant drain on both mind and body

Scofield thought they were not talking to the question—to count capital, interests, etc We had all better give up our farms; we were making nothing

S W Kingsley, in speaking to this question, said the cost of keeping up a dairy was large Thought that 25 per cent was not too large He also digressed, and gave the following as a sure remedy for milk fever in cows. "One pound of common chalk pulverized and mixed with vinegar sufficient to swallow easily"

C C Buell hoped the main question would not be dropped Was a new beginner in the business Had not yet made much improvement; had not even built a good barn Was farming to make money Kept 40 cows; had 100 head altogether Stabled all his stock; had four barns or sheds, did not cost $100 each; they were so warm that no frost came inside: would have to renew them once in fifteen years Could do his work cheaper than the man who had big barns Could bring his feed to the barn Expensive buildings were not essential to profitable dairying

Henry Sherman: How are your sheds made?

Buell: They are studded with 284's boarded on both sides and filled with tan-bark Straw roof filled in overhead with straw. This will make as comfortable a stable for cows as though it cost $3,000—it is the true plan

McLean Was glad to learn how Buell made his sheds, and that some one as well as himself did not run to big barns To arrive at an exact figure of depreciation one must inventory each year

Judge Wilcox: Was aware that farmers were not in the habit of keeping close accounts Had given it much thought, and had commenced a system which he believed would give a correct result as to the actual depreciation of the dairy Would like to hear from the dairymen who had kept such an account Must take a correct inventory to ascertain how one stands Wear and tear of tools and machinery must all be included The farm should have the proper charge for all taken from or put upon it One large item of expense was generally overlooked; it was by contracting to deliver to a factory a specified amount each month This often necessitated buying cows at large figures. Hoped to be able next year to give exact figures

After some further discussion it was voted to appoint a committee of three to carefully investigate and report, at the next annual meeting, what, in their opinion, was the true answer to this question.

The Chair appointed Judge Wilcox, C C Buell and W Wing as such committee

S. N Wright wanted to know the value of heifers with calves by their sides, as compared with old cows.

Mr Lambert (Canada): What breed?

E. H Seward: Grade Durhams come in at from eighteen to twenty months old

Mr McRichards here gave all present an invitation to attend the next annual meeting of the Kishwaukee Farmer's Club, to be held at Marengo, Jan. 26, 1879

On motion, adjourned to meet at 1:30 p m

WEDNESDAY, 1:30 p. m.

After the convention assembled the secretary announced that he had received several mportant communications, from various persons appointed to take part in this meeting.

On motion it was voted to dispense with the reading, but that they be printed in the proceedings.

Topic No 6 was called for, but the parties assigned to open this discussion were absend -

Topic No. 7—"At present prices, does the dairyman, whose milk is manufactured into butter or cheese, or both, at a factory as now generally managed in this state, receive what he ought for his milk? If not, why? And what is the remedy?"

This being one of the most important questions for the dairymen to consider, all present listened with great interest to Judge Wilcox, who spoke to this question as follows. He said;

The points I desire to make in the discussion of this question will be more readily comprehended by first describing, summarily, the factories in general in the northern part of this state, and their proprietorship and management generally

There are within a circle having Elgin for its center and a radius of fifty miles, probably between sixty and seventy cheese and butter factories Many of these are inexpensive structures, erected hurriedly without proper regard to their adaptation—either in their surroundings or internal arrangements—to the business Two men, as partners, are proprietors of seven of these sixty or seventy factories Two men are severally the proprietors of three each. Four men or firms, are severally the proprietors of two each Of the remainder no person or firm operates more than one, so far as I have been able to ascertain

The seven factories of which the two gentlemen are proprietors are in their location distant from each other the distance between the two farthest from each other being at least fifty miles Only one of these gentlemen possesses practical knowledge of butter or cheese making. It is impossible for him to receive the milk, make the butter or cheese, or even to superintend the work in each of these factories Employes of the firm are necessarily intrusted with the business He can visit the factory once a week or so and give the employes general directions The factories of each of the two men who severally operate three factories each are also distant from each other, and though each of these gentlemen is skilled in the business, still the work of receiving the milk and making the butter and cheese is mainly intrusted to their employes

Of the other factories, I believe that it may be affirmed that most of them are under the proprietorship of men engaged in other business, and who are not skilled in the manufacture of butter and cheese, or if skilled, do not make or personally superintend the making of the butter and cheese The factories generally neither internally nor externally present an attractive appearance, and the employes are far from being models in neatness of attire or person Patrons of each factory, in numbers from ten to forty, carry their milk in eight-gallon cans to the factory every morning (except in some cases Sunday morning), an employe of the proprietor receives it, weighs (or, when the account is kept in gallons, determines the quantity) and enters the amount in a book The inspection of the milk if any occurs, is superficial The milk is conducted from the funnel through a pipe into a reservoir An employe puts the cans, one after another, into a box or vat (of a capacity of thirty to forty gallons) containing hot water, scrubs them some with a brush, then holds them over a pipe and lets into them for a moment a jet of steam This is the cleaning that cans receive This water generally serves to wash forty to one hundred or more cans

The milk being taken in, the employes proceed with the work of making from it butter or cheese, or both, as the proprietor of the factory (whose only interest in the milk, is the fixed sum of money which he charges for making, fitting for market and marketing, the butter and cheese produced therefrom) shall direct

In from ten to fifty days thereafter the proprietor puts the product in the market—sells it on the board of trade at Elgin, or sends it to a commission house in some city to be sold, as his own convenience or interest dictates Generally, upon the expiration of two months he announces to his patrons a dividend- and, without any explanatory statement, he simply gives each a check for a sum of money.

The prices agreed to be charged for making, boxing and marketing the cheese vary some—ranging generally from two to two and one-half cents per pound, and for butter generally it is five cents per pound The proprietor of the factory keeps the accounts and figures the dividends The patrons seldom keep an accurate account of the milk delivered. They do not know the aggregrate quantity of milk delivered to the factory each month; neither do they know the aggregate amount of butter or cheese or both made; nor to whom or when or for what price the proprietor of the factory sold the products

Concerning all of these important matters the dairyman is generally not only ignorant, but is unable to easily ascertain the facts It is difficult for him to obtain the data by which he could determine whether the products were in quality or quantity sufficient, the price obtained the market value, and the amount retained only the charges agreed upon.

The proprietor's interest is promoted by obtaining all the milk for his factory which, with his facilities, he is able to handle; hence, in the absence of any guarantee of quantity or quality of the products, it is unreasonable to suppose that either he or his employe would contend seriously with any patron about the purity of the milk No inspection of the premises of patrons is made nor is there any examination into the manner of keeping, feeding and watering their cows, milking their cows, straining and cooling their milk, and caring for their cans.

The naked statement of the management generally of the factories is of itself evidence that the quantity of butter or cheese made was not as large, and the quality not as good, and the price obtained not so high, as might be; and hence, even at the low prices prevailing last summer and fall, the dairymen did not receive what they ought for their milk.

Experience teaches that when the management of a business is confided to hired help success is seldom attained, and the business of manufacturing butter or cheese from milk is no exception to this rule It is bad enough to entrust one's business to his own hired help, but to intrust it to the hired help of another—as dairymen do—is still more disastrous. To this management of factories generally there are some notable exceptions.

These exceptions are generally where all the operations in a factory occur under the eye and helping hand of a skilled proprietor, who appreciates the importance of neatness, care and economy, and of producing excellent commodities—and who therefore endeavors to prevent impure milk being received and to manufacture only first-class goods—and to have all the work done prudently and cleanly.

The dividends reported furnish further evidence that dairymen did not receive what they ought for their milk. The following is a statement of the lowest and highest dividends as reported from a large number of factories, to-wit:

For Month of	For 100 Pounds.		Equivalent in Gallons		Difference.	
	Lowest	Highest.	Lowest.	Highest.	100 Lbs.	Gallon.
May	43 cts.	60 cts.	3 87 cts.	5 4 cts.	17 cts	1.53 cts.
June	32 "	50 "	2 88 "	4.5 "	18 "	1 62 "
July	45 "	52 "	4 5 "	4 68 "	7 "	63 "
August	51 "	72 "	4 5 "	6.48 "	22 "	1 95 "
September	73 "	92 "	6.57 "	8 28 "	19 "	1.71 "
October	83 "	100 "	7.47 "	9 "	17 "	1 53 "

In this calculation I suppose a gallon of milk to weigh 9 lbs., which is probably about 4 oz. above the average Assuming that a patron had fifty cows, yielding per cow per day one and four-fifths gallons of milk the following calculation would exhibit the difference in his monthly receipts, upon the supposition that he received the lowest instead of the highest dividend

For Month of	Gallons Made	Loss per Gallon.	Difference or Loss.
May	2,790	1 53 cents.	$42 67
June	2,700	1 62 "	43 7
July	2,790	63 "	17 57
August	2,790	1 98 "	55 24
September	2,700	1 71 "	46 17
October	2,790	1 53 "	42.67
			$248 06

The total difference in the receipts--that is, loss--for the six months would be $248.06, a heavy item surely to the dairyman.

I desire to call attention particularly to the report of dividends for August, as it seems very instructive. It is as follows:

Gould & Kilbourne, Dundee	65c	North Aurora Factory	60c
" " Algonquin	65	John Anderson, Lodi	50 6-10
" " Home	72	Switzer, St. Charles	65
" " Wayne	72	M' Adams, Algonquin	65-70
James Carlisle, South Elgin	72	Spring Lake	70
Wm. H. Hintze, Kirkland	60	Barreville	65
Newman & Thompson, Springbrook	61	Clark's	65
Dunc. Johnson, three factories	60-62	Oatman, Dundee	70
Coon Creek	57	H. A Bogardus, Batavia	60
Boice, four factories	60	Kibling, west of Batavia	60
Hawthorne Bros	59 60	Potter, LaFox	60
Mr Hathaway, Hampshire	55	W D Turner, Geneva	60
Barrington	65	Montgomery	60
D. K Wood, Huntley	70	Mr. Holloway, Kaneville	50
North Factory	70	Naperville	50
Coral	64	Junction	50

It will be observed that factories under the same proprietorship paid unequal dividends—the largest inequality amounting to 7 cents per 100 pounds, that is, 63-100 cents per gallon. Why was this?

Is it unreasonable to suppose that it was because those factories paying the highest dividends received more of the attention of the skilled proprietor than the others? The Home and Wayne factories are nearest to the proprietors' residence.

I think it can safely be affirmed on the one hand, that the factories exhibiting the best results did not make any more or better butter and cheese than could be made from the milk supplied to them, nor obtain any higher than the market price for the goods And on the other hand, that the factories (which are the most numerous) showing the poorer results, did not get out of the milk all of the good butter and cheese which could be made The logical conclusion is, that there was bad management or there would not have existed so much difference in results I am led to believe, from the best data accessible to me, that fully two-thirds of the milk delivered to factories in this state during the months of May, June, July and August, did not bring to the dairymen, on an aver-

age, over four cents per gallon. Dairymen must do better than that or quit the business, if they wish to avoid bankruptcy, for milk cannot, without loss, be produced at that price.

Prices, I am aware, were low for good cheese last summer—but were they so depressed as to account for such low dividends? A gallon of pure milk is sufficient, under the most favorable circumstances (and dairymen should carry on, or cause to be carried on, the business under the most favorable circumstances), to make a pound of first-rate, full-milk (or cream, as it is called) cheese. Such cheese could have been sold on the board of trade, during the months of June, July, August and September, at an average of at least eight cents per pound, as I am advised by a gentleman thoroughly conversant with the transactions on the board of trade. The charge for making, boxing and marketing cheese say was 2½ cents per pound; deduct this from 8 cents (the market price) and there is 5½ cents left—that is 5½ cents per gallon for the dairyman for his milk, for the months of May, June, July and August. This is 1½ cents per gallon more than was received for probably two-thirds of the milk furnished the factories during those months. Dairymen need not be told that a difference of 1½ cents per gallon is an important matter to them A pound of good butter can generally be made from 2½ gallons of pure milk I am advised that during said months such butter, on the average, could have been sold on the board of trade for 23 cents. Deduct from this 5 cents for making and marketing, and there remains 18 cents; that is 18 cents for 2½ gallons, which is 7 1-5 cents per gallon. These calculations, based upon correct data as I think, demonstrate that even at the low prices of last summer dairymen did not realize what they ought for their milk. A just estimate of the loss sustained by them would astonish even the most thoughtful dairyman Now why this loss?

It may be difficult if not impossible, to assign the true reasons for it The main reasons are probably as follows:

1 The milk was defective.
2. The handling and manufacturing it was uneconomical and wasteful.
3. The products were deficient in quantity.
4 The products were deficient in quality.
5. The facilities for caring for and storing the products were insufficient, and hence sales were compulsory and disadvantageous.
6 The prices charged for manufacturing the products were too high.
7. Sending the products to commission houses to be sold, was damaging.
8 Middlemen—to whose fingers some of the proceeds, in passing, always adhere—were too numerous

I shall not dilate upon these several reasons separately The brief sketch given of the way and by whom the work at the factories was done will convince dairymen of the soundness of most of these reasons. As to the quantity of the products, in the absence of accurate statistics which might and I think ought to be furnished by the proprietors of factories, no definite knowledge is attainable It is a matter of grave importance to the dairymen whether 9 or 13 pound of milk were at the factory used to make a pound of cheese, and whether 22½ or 32 pounds of milk were consumed to make a pound of butter.

My experience, observation and conversation with proprietors of factories leads me to believe that on an average not less than 13 pounds of milk were consumed to make a pound of cheese. The waste in this particular alone has been large

In quality the products—particularly cheese—have been notoriously inferior. Skim cheese has been the make generally This cheese is made from milk divested of the cream, or most of it To this short-sighted and pernicious practice of making skim cheese I attribute in a large degree the depression in the dairy business Skim cheese is unfit for human food It was well calculated to deceive the public; it looked fair and found sales at a price far in advance of its value. Proprietors of factories, commission men, dealers and dairymen made present money unjustly out of it—the latter the least, however. Consumption of this cheese decreased with the increase of knowledge of its demerits, and now it can scarcely be sold except in a market where it is supposed to be good cheese. The damaging financial results do not affect wholly, as it ought, those only who are engaged in manufacturing and selling it; it extends much further, and in its downfall it drags not only good cheese but the whole dairy interest. Unfortunately, like all wide-spread calamities, the innocent with the guilty suffer. It will require years of faithful well doing in the manufacture of superior cheese to restore the valuable fame which this vicinity enjoyed in the production of cheese, a few years ago, and the prosperity then existing among dairymen.

As to the prices charged, they are the same generally as charged eight or nine years ago. By combination and shrewdness the proprietors of factories have managed to maintain their prices in the face and notwithstanding the heavy decline in the price of butter and cheese, in labor, and in property generally and in the profits of business generally. The proprietor- with less capital employed than any one of his patrons owning his farm and dairy, say 160 acres and 40 cows—probably made more money the past summer and fall than all his patrons out of their dairy business. The prices charged are probably nearly double the fair value of the services rendered.

It is superfluous to adduce any facts or reason to convince daiymen of this vicinity, particularly those who were engaged in the business previous to the establishment of the board of trade, that it is, as a general rule, unwise to send butter or cheese to commission men to be sold on commission. Experience admonishes all that loss is almost certain to ensue when butter and cheese is sent off to be sold on commission. The goods should be retained in the factory until they are sold. This is one reason why they should be manufactured so they can be kept without injury, and proper storage provided at the factory.

The less middlemen to be paid in the prosecution of any business the better. Dairymen seem to have overlooked this fact. Probably in no other business can so many middlemen be found as in the dairy business. When the butter and cheese of the dairyman are not made separately by himself, but with others at a factory, what is wanted is help—laborers, butter and cheese makers—and not men merely to do the figuring, selling, and receiving the lion's share of the profits, Dairymen are capable of carrying on their own

business--transacting all of it, and the sooner they unload all middlemen the easier and faster will be their progress to prosperity.

Now, what is the remedy for financial infelicity of the dairymen?

For some of the untoward circumstances encompassing them it is likely remedies may be found in the suggestions already made.

The dairy has become an industry of vast magnitude, and it is of the first importance to success, in the present depressed state of business, that the product of the dairy should be as excellent in quality and large in quantity as reasonably practicable, and these results should be reached as cheaply as practicable.

The first essential thing to this end is pure milk By this I mean milk that is clean, sweet, drawn from a healthy cow and unadulterated, either by addition (as by adding water to it or other foreign substance) or subtration (as by taking cream off of it or the strippings of the cow) Without such milk it is impos ible to make first-rate butter and cheese—such as will command always a sale at the highest market price, and generally a remunerative price The production of pure milk is wholly within the control of the dairyman, and if impure milk is taken to a factory or made into butter or cheese, the fault is with him and he should bear the censure

If all dairymen were careful and honest, only such milk would be delivered at a factory But unfortunately this is not the case Owing to carelessness or dishonesty, among the ten to forty patrons of every factory some milk that is not pure will be brought; and, under the present system—if system it can be called, it will generally be received and used; and in consequence of its use the whole of the pure milk with which it is mixed is more or less polluted and the product is injured Such milk should always be rejected. If the proprietor of the factory bought the milk or was responsible, to the extent of their market value, for a reasonable quantity and quality of butter and cheese from it, unquestionably it generally would be rejected The element of self-interest in such case would be present and incite to close inspection and prompt rejection of impure milk It would also incite to more care, activity and economy in every particular, lessen waste and expense, and insure a larger quantity and better quality of products and more remunerative and steadier prices

If the milk shall hereafter be made up by proprietors of factories -other than dairymen themselves—dairymen might insist upon its being bought by the proprietors

If this cannot be accomplished, the plan prevailing to some extent in New York might be adopted That plan is as follows Let it be agreed that a pound of first-rate cheese be made for every nine or ten pounds of pure milk delivered and a pound of first-rate butter for every 22½ or 24 pounds of milk delivered And let the factoryman agree to account to the dairyman for the value (on a particular day of each month or the average of the month) of a pound of such cheese for every nine or ten pounds (as agreed) of milk received (less the charge of making, etc ,) or if butter is made, to account for the value (determined in same way as cheese) of a pound of butter for every 22½ or 24 pounds (as may be agreed) of milk received (less the charge of making, etc) Prohibit the making of skim cheese entirely. It is highly probable that some such arrangement—which would be perfectly fair and just would achieve beneficient results to dairymen and reward reasonable the proprietors of factories As the business is managed now, the proprietors assume no responsibility scarcely If their hired men make a mistake—add too much or too little rennet, heat too high or too low a degree, or otherwise injure a vat of milk, by which loss ensues- neither the proprietors nor the employes sustain, as they ought, the loss The dairymen usually sustain all the losses, whether from mismanagement, negligence or wilfulness. It is said that every factory has its grave ard, and if these graveyards could talk, a tale would be told disagreeably interesting and instructive to dairymen.

I must not be understood as casting any censure upon, or finding any fault with the proprietors of factories Business is open to all, and if they have simply availed themselves of opportunities to make money—without risk or much capital—furnished them by the dairymen, they are entitled to commendation for their penetration and enterprise

Milk perishes quickly, and to become merchantable, generally, must be converted at once into articles of food less perishable, and this work of converting their milk into saleable commodities is therefore properly the business of the dairyman It is to their interest that this work shall be done economically, cheaply and excellently, and not till they do it themselves, or see that it is done, need they expect the highest remunerative results If they are so unwise as to furnish the opportunity, they ought not to complain if clear-headed and energetic merchants step outside of their vocation and engage in the —to them—thriving business of manufacturing butter and cheese out of the milk furnished by the dairyman, at a high, fixed price and of the kind and quality suitable to their interests. Shrewd men not only have the right, but always will, when permitted, seize upon a chance offered to make money, and I admire the proprietors of factories for the genius displayed in their government of dairymen Like rulers generally, they have managed to draw good pay, while their subjects (the dairymen) have been gradually approaching impoverishment

It should not escape the attention of dairymen that the tendency of business, as to sales of butter and cheese, under the guidance of leading men among the enterprising proprietors of factories has been for the last year and a half, to sell on commission, instead of on the board of trade, as formerly The board of trade was established by dairymen to prevent that sacrifice of their products resulting from sending them away to commission men to sell.

Commission men in vain assayed to thwart, on the start, the success of the board of trade After it became a success, and they could only get the dairy products by purchasing them on the board, they came and bought them and paid good prices, and the dairymen received their reasonable reward The commission men, shrewd gentlemen, became members, gradually they obtained control, and, as a result, to-day comparatively few sales are effected upon the board of trade, and thereby loss of their proper profits ensues to the dairyman. Several of the leading proprietors of factories (men who have the selling of immense amounts of butter and cheese belonging to dairymen) are to-day carrying on commission business in Chicago Unless dairymen lift their voice against it, determinedly, the extinguishment of the board of trade—to them and them only, a most

valuable institution—will soon take place. The agencies of dissolution are insiduously at work, and dairymen only are interested in staying them And, unless they make their power felt to this end, the destruction of the board of trade will be accomplished.

The remedy is for dairymen to insist upon their products being sold on the board of trade, and watch closely all proprietors of factories who are also carrying on a commissinn business Dairymen have the power and the right, and it is, it seems to me, of the utmost importance to them to prevent the ruin of the board of trade, and this can only be done by demanding that their products shall be sold thereon and that they shall not be sent off to be sold on commission Another fact dairymen should note, and that is, that the Northwestern Dairymen's Association has passed substantially from the control of dairymen and is now in the hands of commission men, proprietors of factories, editors of papers, manufacturers of cheese-boxes, vendors of patent inventions, salt, annatto, etc , and merchants engaged in supplying factory fixtures and implements. This fact should be borne in mind by dairymen when reading the suggestions and advice to them found in the annual published proceedings of that association

Dairymen can hardly escape bankruptcy if they continue in the course they pursued the past season, and are now pursuing. The present system, if the wasteful, expensive and unprofitable manner in which their milk is converted into saleable commodities can be called a system, must be so changed as to produce more remunerative results to the dairymen or else abandoned It is favorable to the proprietors of factories, who are in the main middlemen, and unfavorable to the dairymen

The dairymen can, and if changed at all, must change it If more and better butter and cheese, and for less money, cannot be made from their milk (of course I mean pure milk) by the proprietors of factories, than in the past season, then dairymen will be forced to make up their milk at their several homes, or associate together in proper and convenient numbers and erect factories, employ practical cheese and butter makers and under their own supervision manufacture and sell their own commodities or abandon the business.

It is indispensable to the success of the dairy business now, that only first-class butter and cheese shall be made Such goods can always be sold at home, they are ever in demand and sought after purchasers will hunt for them and come for them and pay a reasonable price for them. Such goods, too, can be kept and hence facilities for keeping them, when necessary, should be provided To make such goods, only pure milk can be used; hence a system of inspection of premises, stables, cows, water used, dairy utensils used and management of the dairy, generally, and the milk itself, must be adopted and enforced where the milk is manufactured at factories or upon any associated plan Then there must be less waste and expense in manufacturing and better methods of selling If the proprietors of factories would purchase the milk or manufacture it upon the plan of responsibility, before stated, or upon any other plan which will compel them to assume that degree of responsibility which is necessary to insure the best results and is fair and just, then dairymen might hope for reasonable success without making up their milk themselves, either associated with each other or individually If, however, no such arrangement can be effected with proprietors of factories now existing, then what shall the dairyman do? To go on as heretofore is certain loss Shall he quit the business? That he cannot do at once without sacrifice of property Shall he make his milk into butter and cheese at his own home? Or shall he associate with certain of his neighbors and they make up for themselves? The question whether a dairyman shall himself manufacture his own milk into butter and cheese, will of course depend on circumstances. Where he is capable, favorably situated and able to supply himself with proper facilities and willing to give careful personal attention to the business, undoubtedly he can make more money, all things considered, by manufacturing his own milk. The time and labor devoted to the work would not exceed much if any the time, labor and expense of carrying the milk to the factory and the sour milk, butter milk and they retained would be valuable to raise calves and pork But where not thus situated, probably it would be more profitable for the dairyman to associate with others and have it made up at a factory of their own

Mr. Lambert: (Canada) inquired as to the amount of milk required at different times of the season to produce a pound of butter or cheese

Wilcox: Thought 22½ pounds sufficient to produce a pound of butter His plan was to use the old style shallow pan; did not like deep setting; did not believe as now worked that we received all there was in the milk

Mr Bois used 23 pounds of milk for pound of butter

Dr Woodworth used less than 22.

Hon Wm. Patten said there was a great difference in the yield- it was all the way from 20 to 40 pounds; the season, and the feed used, had much to do with it

C C Buell: Did not know whether Judge Wilcox was a Granger or not; would make a good one at all events. Did not think all his statements would "hold water" Did not believe any factory could give a certain number of pounds of products for a specified amount of milk It is all mixed- no two alike; each thinks his plan the best, and the only The largest yield he knew of was one pound of butter from twenty pounds of milk He knew of factories only paying fifty cents per 100 pounds for milk; this is too low; farmers could not live at it

Wilcox: Advocated no definite plan of setting And in reference to capital going into the business, he knew of no capitalist going into it; they were mostly irresponsible men, of no bottom whatever, which the dairymen of this vicinity had found out to their sorrow of late

E H Seward: Thought Wilcox made a good point when he described the loose manner in which the factories are now run It is a fact the dairyman knows nothing about what is done with his milk It pays the factoryman better to make both butter and cheese, and so he makes it The factoryman is independent; he has your milk and your money. He pays himself first and you last. You stand all the bad debts, shrinkage of weights, bad cheese, and all the other bad things of the business The dairyman should have something to say, as to how the milk shall be worked up, how and when sold, and to whom sold This can all be remedied if farmers will all unite.

C. H. Larkin said the whole plan needed moral support, before any radical change could be effected. In reference to capital invested, he said, in 1875 the Condensing Co., of Elgin, made the following figures with reference to the patrons delivering milk at their factory: Putting land at $55 per acre, cows at $50, and horses at $100 each, there was invested $553,293. The value of milk produced by these patrons was $61,812 Lands have not essentially changed, cows have. Had no direct interest in any cheese factory. Most certainly dairymen had a right and ought to know just what is being done with their milk. Had often kept his milk at home. Thought that 20 4-7 pounds of milk was enough to produce a pound of butter; he had also used 28 4-5 for a pound of butter. He feeds high; believed it the best plan.

Hon Wm. Patten: Had been a patron of a factory for five years; it did not pay; must try some other plan Had known cheese sent to Chicago and sold for 2½ cents. After paying for selling, how much was left? Was now working up his milk at home, and found it the true and best paying plan

W W. Bingham gave interesting figures as to his dairy. Sold his butter in Chicago.

G P Lord said the plan, or habit, of skimming milk was a fraud, and should be stopped; if every patron should skim his milk it would bankrupt any factory

Wm. Lambert: Told his experience with watered and skimmed milk. He brought suit against one patron from whose milk he had taken twenty-five per cent. of water, because he did not see him put it in. We needed better laws to prevent the adulteration of milk

On motion, the chair appointed R P McGlincy, C. C. Buell and E. H. Seward a committee to nominate officers for the ensuing year

The secretary read the following report as the doings of his office for the past year:

SECRETARY'S REPORT.

Cash on hand at last report	$1 04	
Cash received for membership	4 00	
Cash received for reports sold	75	
Cash received for advertising	32 00	
Cash received from H W Mead, Treasurer	79 00	
By cash paid for printing reports		$111 00
By cash paid for postage, stationery, etc		2 75
To cash on hand to balance		3 04
	$116 79	$116 79

Which report was accepted and placed on file

Wm Burton said -in reference to skimming- it was a bad practice If you take a little for coffee, and then a little for strawberries and then a little for butter you would soon take it all The dividends are small as it is; if this practice is pursued they will be still smaller. The manufacturers test the milk, and should receive none but good The dairymen themselves were to blame We could really tell but little about the dividends we see published; they are often paid larger than they really are so as to draw patrons from other factories which pay less A good deal of jockeying is done

Wilcox. Was glad to hear Mr Burton's remarks, but was sorry to know such facts existed, it was impossible to get good dividends where such practices were indulged in; he was astonished to know the practice existed to such an extent The making of butter and cheese from the same milk was a new thing It took time to perfect the business so as to make it profitable

G P Lord said if permission to skim was given, he could get rich out of water.

Mc Richards Thought if all patrons of a factory took the same ratio of cream from their milk, no moral wrong was done All would furnish alike and all receive alike.

Wilcox: Thought the best plan for each dairyman was to take out just what he wished for family use, when it was milked, but never skim

Mc Richards objected to the general tone of the discussion He did not believe the dairymen of Illinois were all dishonest or foolish He did not believe the practice of skimming was near as great as represented, at least in McHenry county; but yet, if any is done, it ought to be stopped

C C Buell said the question was being treated in a "milk and water" way. He thought they were making a "mountain out of a mole hill"

D C Scofield added his protest against skimming It was all wrong, and the crime was in proportion to the amount taken One takes a pint, one a quart, and pretty soon you have taken all there is worth taking

L. Bartlett: Said there was a great difference even in good milk. Some is worth two cents per gollon more other He could not believe this practice existed to any alarming extent He had a better opinion of dairymen

G. P Lord said the best plan was for each dairyman to keep a cow for family use

A member said the evils extended to the factories, where each employe took all the cream he wished for family use or even more

After some further discussion of this subject, it was dismissed, all feeling they had been pretty well skimmed

The committee on nomination of officers for the ensuing year made the following report, which on motion was adopted, and the names submitted were declared duly elected:

President, Dr. J Tefft, Elgin.

Secretary, M. H Thompson, Elgin.

Treasurer, R M Patrick Marengo

Vice—President, Hon. Nathan Williams, Rock Falls; Hon Wm Patten, Sandwich; S. W. Kingsley, Barrinton; J Woodworth, Marengo; J. R. McLean, Elgin; I. Boies, Davis Juction; L Bartlett, Bartlett Station F. H. Hall, Sugar Grove; I. H. Wanzer, Galesburg; Chas Boone, Winnebago; John Smallwood, Freport.

On motion, the convention adjourned to meet at 7:30 p. m

EVENING SESSION.

WEDNESDAY, DEC. 11, 1878.

Upon the reassembling of the convention –

Topic No 8– "Is it profitable to grind feed for the dairy? if so, can it be profitably done on the farm?"

This was considered a very practical question, and one which was of great interest to all dairymen Their attention was more particularly called to it last winter, during the mud embargo of the roads

E. H Seward said it was an important question; but just now, as grain is so cheap, it was a question as to profit, between grinding and feeding whole Grinding at home costs a great deal. The iron mills only cut, they do not grind If there was some sure, cheap way, it might pay to grind on the farm, but at the price of grain now it would scarcely pay. If a few neighbors could unite in one mill—and that a good one—he thought it might pay Thought to steam feed was better and much cheaper and made better milk

Two bushels of rye would make five after it was steamed and would feed 45 cows one day. After steaming it should be mixed with bran and fed warm It took longer to cook corn than rye One bushel of rye is equal to three bushels of oats for milk His plan was an upright steamer; water flowed from an elevated tank; the grain was steamed in a barrel About one and one-half hours was consumed in cooking a batch It was less labor than grinding, and cheaper, for the fuel was no object as a few cobs did the business Stock prefer steamed to ground feed Cows will shrink when changed from cooked to ground feed Had experimented with all varieties of feed; believe cooked the best, but must not be fed too hot.

C C. Church had known cows to become spring poor on cooked food; did not think it as good as dry feed

C. C Buell thought grinding the best plan, and believed it paid. He used a "Big Giant Mill" and ground on the farm, could grind fifteen bushels per hour if kept in order. Commenced to grind as soon as hard enough in the fall Used horses or mules as power It did not pay to haul over two miles to mill

W H Stewart thought it paid to grind, and if it could be ground on the farm all the better

Dr Tefft believed in grinding, but wanted his ground very fine—it was the only way to get good results

Wm Patten had used an iron mill, with good results. Now chopped his feed fine which also gave good results

Mr Lambert inquired as to the value of the cob ground; the opinion being that there was no value in the cob

Wm Patten thought the profit of grinding depended a great deal upon the amount of labor required, etc

C C Buell said he had often changed from ground feed to stock corn, and found his cows did well

W W Bingham believed in grinding Had used all kinds of feed - found corn and oats to be the best all considered Often mixed bran

C C Buell Asked as to feeding cows buttermilk, and how fed

Mr Lambert said buttermilk was not fit to feed to cows; if fed to one cow, her milk would spoil a batch of 4,000 pounds it took five pounds more to a hundred for butter, when fed

Buell thought we must not draw too sudden conclusions; bran if fed alone made poor milk, but if mixed with other feed it was good, it might be so with buttermilk

W W Bingham Thought sour milk fed to cows would affect butter

Mr Lambert wanted to know how we could have our milk come to the factory in better condition But no one seemed to know just how to do it

Topic No 9—"Should gross or net figures be given at conventions?"

No one seemed to take interest in this question The discussion rambled over the entire dairy question.

Lambert thought that cows when warm should not be allowed to drink cold water

Mr Patten said hot and cold milk should not be mixed.

Mr. Lambert said in Canada all milk was carried in large cans, while small ones were used—each farmer bringing his own milk He liked this plan the best

Dr. Tefft inquired if any dairymen had experimented—as keeping green corn

Mr Patten had cut clover green and put in his barn Was told it would burn his barn, but it did not Was good feed, his cows liked it, and it produced a good flow of milk Believed this the correct plan.

On motion, the convention now adjourned to 9 a. m to-morrow

WEDNESDAY, DEC 12, 9 A M

After the convention was called to order, topic No 2 was again resumed, as the subject of soiling was considered of great importance to the dairyman.

G. P. Lord said he had read in the *Country Gentleman* how we could cut but 40 tons per acre, of green corn, while in France it is claimed 120 tons can be raised Now can we raise 120 tons per acre? If one person can do it, all can do it Under the same circumstances, he believed corn fodder very valuable feed for milch cows when dry weather usually begins In August he began feeding 40 head one bushel of cut-corn fodder per day—i e, run through a cutting machine One-third of an acre would make 1,600 messes; this was cheap feed To make it pay we must keep more stock on the same land; we must makemore than we do now. The French have a mode peculiar to themselves They dig deep trenches in the ground and bury the green corn, which comes out sweet and good is kept in this manner for a long time—when it is freely eaten by the cattle Anyone could try it, it costs nothing

Dr Tefft thought this an important question, and should be further discussed He quoted from a paper read by ex-Governor Price, of New York, on this subject, showing the plan of burying. Said it was chopped fine and then spread in layers in ditches, with

layers of straw, and then covered two feet deep with earth; pains is taken to close all crack or openings. When taken out it showed no fermentation, and stock would eat it readily. Could be kept sweet by this plan for one year. If this is a fact, we can keep our cows cheaper than we now do Two acres would keep a cow for one year.

Geo P Lord said the French plan was to dig trenches nine feet wide by four deep; when filled was raised above the level of the ground Some have said, to dig these trenches would cost more than to build all our railroads -they might be worth more. The country was new yet, and we have much to learn in the line of agriculture.

Mr. Lord did not advocate this expensive mode; had had experience in feeding in the old way fed corn-stalks whole, now cut all his stalks. They then were out of the way — did not trouble in the manure.

W Patten thought the present style of plow had much to do with the kind of manures used.

W W Bingham asked if there was not some other articles as good as corn for soiling,

Wm Patten wanted to know if we were far enough advanced to engage in this kind of farming The more he put upon his fasm the less per cent he received from it In Germany they had no fences. All stock was kept by soiling. As to the number of cattle kept on an acre he could now keep double the number formerly kept, or twenty years ago Some dairymen had said that one man should be employed on the farm to every fifteen cows; at present prices the receipts of the dairy would not pay the help If one man could keep 60 cows on 100 acres, another ought to do the same And if it can be done, then the most of our farmers are sustaining a great loss, and are far from a perfect style of farming He began by sowing rye in fall; in spring sowed oats—four bushels per acre; then drilled corn, then field corn; also raised beets and turnips and other roots; also using corn meal By this plan he could make one acre keep one cow. Sowed his rye at different times, as well as corn, so as to have green feed at all times. He had come to this meeting on purpose to learn about soiling Most men were land poor; they were compelled to spread their manure too thin Used three bushels of seed per acre for drilled corn.

Geo P Lord: Said clover was used by many Also Hungarian was much in favor, as two crops per year could be raised He used two bushels of seed per acre for drilled corn, and when full-grown could see only the first row

Bingham said after cutting his rye he then used the same land for corn thus raising two crops per year Kept his cows in stanchions 20 hours out of the 24 By this style of farming, the small amount of land used called for less labor—he used no pasture at all—and the land tilled is consequently very rich and productive

Thos Bishop. Thought this mode of farming looked green. How 10 acres could feed 60 cows in summer was a mystery He used a large piece to feed 30 cows; did not believe in this wheel-barrow style of farming Ten acres could not keep three cows; it could not be done He was one of the doubting Thomases

Bingham: Fed meal all the summer Used orchard grass and red clover

Dr. Tefft said he noticed that Ben Butler said we of the United States were land poor, while in France ten acres was considered enough, where the whole country only about equalled Texas France, in 1876, exported $186,720,000 of butter and cheese, while we only exported $17,789,00; theirs are small farms ours are large ones

Wm Patten thought it would be a long time before we could reduce our living expenses to a level with Germany or France

Bingham said it was an established fact that small farms would always yield a greater per cent than large ones.

Thomas Bishop: Could see no difference between large and small farms. A small one could keep four or five cows, a pig, a chicken or two, a goose and a turkey or two- how could these manure it so as to produce such wonderful crops? It can't be done; its all nonsense Small patches may do for amusement, but when you talk about making money, you have got to have room to do it

Bingham said on 36 acres he raised corn, cherries and all kinds of small fruits, as well as eight or ten cows Made a good living and more too

Wm Patten inquired how much he paid for labor

Mr Bingham: Do not call my own time worth anything, and I do most of the labor

S N Wright inquired of Bishop how many cows he kept.

Mr Bishop said he had 40 cows

Mr. Wright: Had considered Mr B one of the best farmers in the county, but was now in doubt, as he (Wright) had only about one half as much land as Bishop and he kept 45 cows and four horses. Came to this meeting to learn about soiling He felt confident that no one was aware how much stock could be kept by soiling and feeding in the barn. Thought one acre sufficient to keep a cow

Mr Bishop. Knew many men around him who were trying to carry too much; were always hard up for money He kept on his farm 40 head of cattle—and managed to keep out of debt, and have $1,000 a year more than he knew what to do with. Kept plenty of pasture, only fed three acres of fodder corn the whole season, and that was not fed yet His expenses were light; he paid but $12 per month for help

S N Wright; I paid only $10.

Bingham: I do my own work, which is cheaper still

Mr Lord here stated that it took about 15 minutes to cut the feed for 40 cows at one feeding

After some further discussion of this subject, the matter of adulteration of milk was again taken up--when Geo P Lord offered the following resolutions, which were seconded by W. W. Bingham, of Marengo:

WHEREAS, It has been publicly stated in this convention, that the practice of skimming milk is quite general with those furnishing milk to our creameries, and that this habit has obtained mainly through the misapprehension on the part of dairymen, and whereas the adulterations of milky substracting cream prevents manufacturers obtaining the best possible results, and reduces the current price of pure milk, to the injury of all interested in the business, and,

WHEREAS, In the present depressed state of the market, it is of importance that the quality of dairy products be greatly improved, and this improvement can only be achieved by the use of pure and unadulterated milk, therefore

Resolved, That the abstracting of cream from milk furnished those who manufacture it and divide the proceeds pro rata among their patrons, is unjust, in that it unfairly reduces the value of all the pure milk furnished such manufacturers and injures the reputation of the dairy products of the West, and that such practices should be abandoned at once

Resolved, That, in the judgement of this convention, those who receive and manufacture milk, the proceeds of which are to be distributed pro rata among their patrons, have accepted a sacred trust—a trust requiring great vigilance and care—and that they are morally as responsible for the quality of milk they receive, as they are for the products of their factories, and that it is as unjust for them to receive adulterated milk, knowing it to be adulterated, as it is for dairymen to furnish such milk, for they cannot but know that the adulterated milk reduces the value of all pure milk they receive, and therefore works to the injury of their best patrons

Resolved, That as it is absolutely necessary that the quity of our dairy products be so improved that they will command a price in the market that will remunerate the producer for his milk, and as such improvement in the quality can be obtained only by the use of pure and unadulterated milk, this convention advise all engaged in the business of manufacturing milk, to adopt at once a thorough daily inspection of all milk received by them Such inspection should show the temperature of the milk when received at the factory the quality of the milk as indicated by the lactometer and the quality of cream in every hundred pounds of milk and should be recorded in a book in such form and manner as would enable all their patrons to know the daily average quality of all milk they receive, and they should positively refuse to take milk from any and all persons who skim or abstract any portion of cream from their milk

Mr Lord spoke to these resolutions, strongly deprecating the practice of skimming A farmer might just as well take one can of water and one can of milk to the factory, and ask pay for two cans of milk The practice was wrong, and should be stopped How is it with the individual who accepts the trust to receive this milk? Does he know of this skimming? or does he consent to it? If 20 men take to a factory, and five take poor milk, the other 15 would have reason to complain and just cause to protest and demand that all bring good milk When cows are coming in at all times of the year the milk should average about the same; of course where grain is fed in abundance the milk is of a better quality, There is not a set of dairymen of the whole world that feed as high as the Illinois dairymen The Eastern dairyman cannot afford to feed, for his grain is worth more than his milk There is no reason why we should not make the best product in the world He admired a man who could make a good cheese without using a particle of cream The skimmed cheese was really the philosopher's stone

C. C Buell; Was amazed that so much could be said on this matter of skimming; he really did not know how to vote It was all plain, for it rested with the farmers they were to blame if there was any blame; did not think that any resolutions would prevent it.

Mr Lord: Said the question had been discussed at every meeting of this convention, and now some action should be taken Silence gives consent.

W H. Stewart The resolutions seemed like an attempt to shift the responsibility—it was always somebody else. The remedy lies just where the crime lies No one wanted to go smelling around; and tell his neighbor he was skimming his milk and that it was wicked, and that he should cease the practice at once—or go where wickedness finds its reward; this would be a small mean thing to do Factories are thick; confusion would be the result The farmer and not the factoryman should make the charge There is no way to get at it. Who is going around to find it out? It would be similar to the tax on incomes; it would be odious—it could not be done. Did not like the resolutions.

Mr Lord said. It was stated here yesterday that the farmers were the dishonest ones; if this was not true, it should not be said If there is no way to find this out then this statement should not be made The person who receives the milk should know whether it is adulterated or not; if he has no means of knowing, then this charge should not be made against the farmer The person who has the custody of the milk is the proper person to watch this matter, and if necessary make the charge—whether it be the richest or poorest, largest or smallest patron of the factory No man has any right to take any cream at all—and no maker can say so. We are zealous about this, because our money is in it We have a right to watch this If one patron is crooked it interests all, and we have a right to demand that all shall be honest Our product is double in value all the gold and silver in the United States; indeed, it is so large that one can hardly conceive or comprehend it, and is constantly on the increase He spoke warmly as to the second resolution, and the trust accepted by the manufacturer he was the proper person to detect any wrong-doings, and should at once bring all guilty parties to justice

C. C. Buell objected to this debate, as it was a wholesale denunciation of manufacturer.

Capt Stewart also thought it taking to much latitude, inasmuch as it was attempting to place all the blame upon all the manufacturers This was all wrong; they have sins enough of their own, without assuming for others.

Thos Bishop: Said that most of these charges were made by men who did not patronize cheese factories They sell to the condensing factory and have no right to complain. They take their Sunday or surplus milk to the cheese factory, and it is the poorest milk received.

After some further discussion, a vote was taken, the resolutions were adopted by the convention, thus placing themselves squarely on the record as against skimming, or receiving skimmed milk at factories

Topic No. 10.—"Do the benefits derived from manures equal the depreciation of dairy stock?"

John Keating: Thought this a hard question to answer, but a very important one. He believed the depreciation of a dairy to be at least 12½ per cent ; at the same time he believed the manure would nearly if not quite offset this. Manure is worth $10 per head per annum from a large dairy, if rightly applied.

He thought top dressing the best plan of application.

Thos Bishop: Received more from old cows than it cost to buy new ones; therefore it was a gain and not a loss to change cows

After some furter discussion of this topic the state of the finances of the association were thoroughly discussed.

Dr Tefft stated the present condition of the treasury strongly urging all to become members, so that the proceedings might be promptly published.

R P McGlincy also spoke to this question He said the reports ought to be printed, and that the secretary should be paid; no one could afford to work for nothing—gratuitous labor was always dear labor

Secretary Thompson suggested that as the annual fee was so small—only one dollar—that all double up and the difficulty would be overcome at once This suggestion seemed so sensible that the double up plan was adopted at once, whereupon the financial condition was greatly improved.

Dr. Slade said although the association were making efforts to secure aid from the state, it might be a long time before we could get it

On motion of G. P Lord two more members were added to the committee on legislation, one of which should be the president And on motion of C C Buell, the committee were voted power to appoint the other member—which the committee proceeded to do by appointing Mr M H Thompson as the other member

On motion of M H Thompson, it was voted to make all members of the press, present, honorary members of this association

On motion of W W Bingham it was voted to invite the ladies of northern Illinois to attend and participate in the meeting of this association. He believed the ladies could help very much in making the meeting interesting He also extended a cordial invitation to all to attend the next annual meeting of the Kishwaukee Farmer's Club, to be held at Marengo soon. He further invited the Illinois State Dairymen's Association to hold its next annual meeting at Marengo

R P McGlincy spoke in favor of the next meeting being held outside of Elgin, and after some discussion it was unanimously voted to hold the next annual meeting at Marengo, Illinois

Thomas Bishop was glad to see improvement being made in the manner of conducting the meetings We had formerly been overrun with professors They did not come any more; hoped we were done with them All had some patent, or salt, or something else, to sell

After some further promiscuous discussion the meeting adjourned, te meet at 1 p m.

THURSDAY, DEC 12, 1878, 1 P. M.

Convention called to order as per adjournment, when Topic No 11--"Is it practicable to reduce the cost of producing milk so as to correspond with the decline in prices?"

John Keating read the following paper upon this topic:

JOHN KEATING'S PAPER.

As surely as the summer's bloom is followed by the winter's snow, as surely as the copious rain is followed by the parching drought, as surely as the glory of mid-day is followed by the darkness of the night; so surely are times of high prosperity and inflated values followed by periods of depreciated stagnation and distress Such has been the experience of mankind from the beginning, and such has been our experience of late.

We have passed through the happy days of prosperity, into their pleasant heats, their fertilizing showers and their glorious sunshine, and we are now surrounded by wintry cold, draught and darkness What then are we to do? throw up our hands in despair, and exclaim that it is useless to struggle against hard fortune? By no means Despair helps nothing and summer will come again The question then suggests itself, is it possible for us to reduce the cost of producing our milk so as to correspond with the decline in prices, and thus to do as well in the future as in the past? To this I would most emphatically answer no It is not possible to reduce our expenses so much, the depreciation is too great We must be satisfied with cheaper living and smaller profits

But, while we cannot do everything, we can do something; we can do much We can lessen the cost of producing milk very much by pursuing the right course with patience, vigor and determination

What then is this course, and how can we pursue it? And here I must confess I feel my inability to point out, much less lead, in such a course, and that I can but offer a few suggestions which have occurred to my mind

The first, and most important step in reducing the cost of producing milk, consists in increasing the average yield of our cows Worse than dull markets worse than low prices is this fact; this lamentable fact, our average yield is too low We feed sixty cows to produce the milk that fifty ought to make In times of high prices we might endure this; at present it presses us severely This question of a high average is really a most vital one Were we to know the number of cows we keep for nothing, were we to know the number, we keep at an absolute loss, we should be struck with horror. "Where ignorance is bliss, 'tis folly to be wise," may be sometimes true, but where ignorance is loss and ruin, 'tis folly not to be wise Is it a fact, as often asserted that as the dairy increased our average decreases; if so, why is it so? The principal reason is, I think, that for years we have been pursuing a suicidal course, regardless of many warnings We have been selling our best calves to the butcher, raising few or none of our own cows and depending on the culls and scalawags of the north-west to supply our dairies This slaughter of the innocents must cease We must raise our own cows from our best calves, and when we have done this we shall find our average much increased, and consequently our production cheapened. It will be of little use for us, however, to raise our own calves if we do

not take particular pains to raise good ones. In order to raise a good average of calves, it is necessary that the cow should be a good milker and that the calf be sired by a male of a good milking breed. This is a matter of the most vital importance. A first-class male is a necessity in every well conducted dairy, and the man who uses a poor, infirm beast merely because he gets him cheaper, is very blind to his own interest

The importance of this question of a large average yield can hardly be exaggerated; it is the foundation of all successful dairying The man who gets from his cows an average of 2½ gallons, will prosper, while his neighbor, who gets 2 gallons, will lose Simply because one man makes a profit, even it be a small one, while the other man gets back barely what he gives and sometimes less, and consequently never gains I firmly believe that this matter of small and decreasing average yield, has injured the dairymen of the North-west more than disease, accidents and low prices combined We must constantly bear in mind that it is on the profit we live; on the excess of receipts over expenditures This fact alone will account for those cases, with which we are all familiar, where men with small dairies and small farms have prospered, while others whose annual sales have been much larger have lost money. We *must* get the deadheads out of our stables, we *must* make a better average in the future than in the past or the depreciation in prices will ruin us

You will notice that in speaking of this necessity of a better average yield from our cows that I have dwelt mainly on the necessity of raising our best calves and of weeding out our poor cows I have done so not because I consider that this is all that is necessary, or even that it is of the first importance; far from it With the best of cows we will fail, and miserably fail, if we do not shelter them from the cold, feed them generously and water them abundantly. But in this matter of feed and shelter, as far as my observation and experience goes, we have done well in the past and are doing well in the present. In the matter of water, perhaps, this is not so generally true Some cows still drink in holes, broken in the ice, on rivers and sloughs, at the risk of breaking their legs; and some travel a mile or less across a snowy waste to a distant spring This is all wrong, it is expensive, it is ruinously extravagant Clear water, abundantly supplied in our barn-yard to our cows, will prove a paying investment and will materially cheapen the production of milk

Give me *good* cows, not runts or scalawags or culls, warm barns, well ventilated, rich food, properly fed, clean spring or well, water close at hand, careful and intelligent milkers and I will produce milk as cheaply as it can be done in North America

Ah! but careful and intelligent milkers are necessary, and they cost money Do they not cost too much? Must we not reduce the wages we pay, if we would keep pace with the reduction in the price of milk?

We must; we certainly must I believe that the laborer is worthy of his hire. I would be the last man on earth to attempt to oppress or grind the workingman. But we must be just to ourselves and to our families as well as to our laborers. The dollar which we pay him now has increased very much in value in purchasing power within the past few years Prices of clothing and food are much lower, the expenses of an individual or family much less. We ourselves receive much less for what we sell than we formerly did, and justice -simple justice—demands that we should hire labor at a lower price than we have been paying In order to effect this it is necessary that we should act together with some degree of unanimity If we succeed in doing this, we will have cheapened the production of milk so much This question of wages is a very important one Dairymen must from necessity employ a great deal of help I presume that the wages paid will average on most farms one-third, and on some even a larger proportion of the expenses A reasonable and just reduction in wages is therefore a thing much to be desired, but we must guard against false economy It is not economy to hire a scalawag man, any more than it is to buy a scalawag cow; we must carefully avoid both It is not economy to keep but one man, when you have work for two Pay good men fair wages, as the times go, and employ enough help to do your work in a thorough and seasonable manner With brains at the helm, I am convinced that the more men employed, the more money made Let us get out of our farms and our cows *all* that is in them Let us raise no weeds, keep no dead-heads, and we will succeed in spite of low prices

It is important for us also to consider that everything which tends to a better system of farming, to an increased yield per acre from unplowed meadow and pasture lands, to better drainage to better care and application of manures, better care of tools, better fences, more thorough eradication of weeds—the curse of the agriculturalist; in a word, *everything* that tends to thrift, economy, enterprise and progress, will cheapen the production of milk, directly or indirectly

As I have said before, I am not sanguine that with our best endeavors we can keep pace with the depreciation in price of our products, but this very depreciation may be profitable to us in another way.

If the efforts that we are obliged to make to stem the tide of bad fortune should make us better farmers than we were before, better men than we were before; if it should cause a renewal in us of the old-fashioned virtues of honesty, economy and industry; if it should cause us to adopt the rule, "Pay as you go," if it should compel us to do without superfluities and luxuries until able to pay for them, then might we truly exclaim with the "Bard of Avon"

"Sweet are the uses of adversity,
That like a toad, ugly and venomous,
Bears yet a precious jewel in its head."

Thos Bishop: Asked if there were not many ways of furnishing milk. Some used a small patch of ground, bought all their feed and made a large quantity of milk, while some used large farms and produced no more Which was the better plan? Who could give the exact figures? He would like to know which was the cheapest He could keep one cow on five acres; no less Some claimed to keep one cow on two acres; did not believe they were well kept. As to why the price of cheese is so low? it was all plain to him -it was because there was too much cheese When pork is low, there is too much pork; when wool is cheap, there is too much wool; and the same with everything else.

We are now making more milk than the land will naturally produce. We would make more money to kill one-half of our cows and let one-half of our farms go wild. He made eight or ten cans per day; his neighbors made a long wagon-load; we all make too much. His expenses, of all kinds, including taxes, etc , were about $900 or $1,000 per annum. As to the loss from keeping up a dairy—there was no loss He sold his fat cows for about $40 per head, and could buy in for less money. Always kept his cows fat and in condition to sell; he could clear annually from his little farm $1,300 or $1,400; what large farm ould do better

W W Bingham was also in favor of small farms There was less wear and tear, and on the whole were far more profitable and more desirable

J Keating said it would not do for one man to reduce his milk one-half, with an idea of controlling the market. If there could be a concert of action and all do so, it might do some good It seemed to him that the sensible plan for each man to make all he could from his land, let his land be large or small; each farmer should keep all the stock his farm would carry

C C Buell could see, that if you cut an article in two pieces, how it might affect the whole; same with silver or gold Thought a good agricultural paper was a good medium to learn how to do these things scientifically; there had been too many hap hazard experiments; must get down to business and facts. As the Germans and French people do, we lacked knowledge as to soils, etc We ought to know *why* bran is not good to feed to make butter; we do not We only know such is the case As to the low prices, no one rule could be adopted No two farms were alike; every farmer must make a rule for himself Science at best was nothing but good common sense.

S. N. Wright: Was a small farmer Began with 125 acres; now used but 85 Had paid out since last January $101 for feed; had 43 cows While Bishop had used five acres of land for each cow. These five acres, at $70 per acre, would be worth $350; which at ten per cent , would be worth $35 Now this is as much as an average cow will yield net. Where is the profit of such farming? He could keep one cow on two acres, worth $40 per acre—or $80 per cow for land—the use of which at ten per cent is only $8 His labor was no more than Mr B 's, but his profits were much larger

A Gulick said the only way was to use all the manure we can and raise all we can—if you are a dairy farmer, then make all the milk you can The average farmer gave too little attention to manure He here gave an account of sickness in his herd, which so far he could not understand or explain.

S. W Kingsley· Wanted to know the value of salt as a manure, as experimented with by the Kiswaukee Farmer's Club.

L W Sheldon said exact figures had been kept, and would when completed, be given to the public

S N. Wright said that oil cake was an excellent feed for milk cows, and was not expensive in proportion to its real value, as compared with other feed

S W Kingsley also spoke in favor of oil cake, as being a most excellent feed for dairy cows

Henry Sherman: Said he was 70 years old—most too old to make a speech He was a city dairy farmer—that is, he let his farm—and took all he could get for the use of it. Could not tell whether he was making or losing money; he knew if a cow died he was pretty sure to get the hide; He did not believe all in one kind of farming; would not take all his eggs to market in one basket He had drifted into dairying and should most likely hang on till he died; could then tell whether he had made or lost He raised a little sweet corn for the packing factory. Sold last year $1,200 worth. The stalks were good feed for cows, if cut while green.

Dr. Tefft: The glut of the market was not for the best goods; they would always sell. We make too much poor goods France is doing much better than America; her dairies are paying better; their prices are more reliable

Henry Sherman said he was the man who built the first cheese factory in this region; sent to New York for his outfit There was no cheese here then and no price Run it the best he could and that was poor enough, but found he had too little religion to run the business, so got out of it. Patrons were ungrateful; would leave you just when you needed the milk the most, for one dollar Factorymen are now charging too high; they must come down; the farmer must be allowed to make an honest living, dress well and pay the minister

Col Wilcox said he had to pay 25 cents for good butter, while poor was worthless. Butter at 25 cents does not look like hard times As to exporting—you do not supply the home demand for *good butter* This should be done first, then export. All goods should be sold on their merits- the same as Babbitt or Colgate sell soap. A trademark is a valuable thing You must make *good goods*, and you will find no trouble in selling It should all be branded just what it is. Everything should be good No farmer should keep scalawag cows; they cannot afford it The farmer who keeps half poor and half good cows will lose; the account will just balance, with his time and labor thrown in The cow that gives one-half gallon more than another is the cow to keep. There is where your profit is He strongly urged all to brand their goods Don't be afraid to put your name on every cheese box or butter tub

R. P. McGlincy also urged all to brand their packages. If Jones made cheese, why not put Jones' name upon it, with the date of its manufacture? Then a consumer could readily tell whether he was eating a new or old "customer" He believed it was not as much over-production as under-consumption, which affected the price. Make better goods, and then we will hear no more about over-production Cheese is a wholesome food and cheaper than meat, and would, if good, be largely used.

Dr Tefft said as the factories now charged five cents for making butter, they were receiving more than their share of the profit. No farmer could afford to pay this price, it was nearly one-third of his income during the summer months The factoryman has it all his own way now, and runs his factory to make the most money for himself, and let the dairyman take care of himself.

Geo Marshall said the Blackberry factory paid 40 cents per 100 pounds. Took the milk in large cans and they often found three or four quarts of Blackberry creek mud in each can. This dirty practice is not fair; goods made from such milk will not keep. Farmers,

as a rule, are run by everybody: lawyers, merchants and doctors all have a pick at the poor farmer, and last, and worst of all, the cheese factoryman comes in to carry off the skeleton They receive your milk and make it into what they please, pay you when it suits them, and as much as they please and what can you do about it? They had no system. Could not sell on board of trade. The commission men and factorymen were in collusion to rob the farmer. There is no system among them only for plunder

Dr Tefft said the blame all rested with the farmer, they could dictate where and how their milk should be worked up The true remedy is not to take our milk to a factory which would not sell its products on the board of trade He had known farmers who had attempted to speak on the board to be hissed down by the buyers because they dared to talk for their side of the question This was all wrong The producer, manufacturer and buyer should all work together, their interests are mutual

Wm Burton said, as to selling on the board of trade, it was not always possible or practical to do so When the tenth came the farmers wanted their money Consequently the factoryman must sell or he can't pay Both Marshall and Wright were as fast for their pay as anyone else, and would not consent for a factory to hold goods Therefore if there is no price on the board we must sell somewhere else If the patrons would back him he would sell anywhere they choose

Marshall thought that if all would sell on board no backing would be needed Should sell for what they could get. Our factories are not honestly run The factory he patronized was run by a broken-down lawyer, who knew nothing about the business but to cheat the patrons. The truth is, if all would stop selling on commission the buyers would all come to the board to buy

R P McGlincy: Was glad to hear this question discussed He believed all should sell on the board or not at all It was a fact that commission men had made several attempts to break up the board, but had failed so far. Goods should not be sold at factory. Hold till sale day, then all will be sold at a fair price There is generally a tail to all sales made on commission, either in short weights, bad pay or some other way He urged all dairymen to patronize the board of trade and mutually protect themselves.

Wilcox said the factorymen would look out for their interest, so must the farmer or he would be left out in the reckoning

B Cox wanted to know if buyers would not come to the board meetings to buy *good goods*

Wright said he had known where commission men had offered to advance money to make monthly dividends This clearly showed collusion

Burton did not see how a dividend could be made out without making a sale and showing the bills

S N Wright knew it to be a fact that a commission man had attempted to bribe the Clintonville factory not to sell on the board of trade. The whole manner of working up and selling is a fraud on the producer.

After some further discussion of this subject, in which it plainly appeared that the system, as now practiced, in making sales was not satisfactory, the convention adjourned, to meet at Marengo Illinois where the next annual meeting will be held

T J. Burrill furnished the following paper, which was received too late to come under its appropriate head·

FERMENTATION AND PUTREFACTION OF MILK.

In early times, with peoples as with individuals, the changes which occurred in such a substance as milk when allowed to stand for some time excited no curiosity; stirred no one to inquire why the phenomenon presented took place. If any thought is given to the subject a satisfactory conclusion is reached when it dawns upon the mind that milk sours because it is its nature to do so; it becomes unpleasantly odoriferous because it could not continue otherwise From this low beginning it is a long way and by no means one without difficulties to the full knowledge now possessed by some investigators of the changes and their causes which take place so persistently in so common an article as cows' milk It is possible that some whose business makes them more especially interested do not yet appreciate the fact that all these ordinary changes arise from the action of living organisms altogether foreign to the constituents of the milk itself For a long time the idea has been current that in such organic compounds changes arose through spontaneous chemical agencies, that the oxygen of the air is the chief factor in the production of the results observed This was supposed to be confirmed by the fact that the air being driven out by heat the changes came later, or upon. excluding the air as by heating and canning, they occurred not at all But it has been demonstrated that pure air may have free and abundant access to putrescible compounds, such as milk, without the latter becoming in the least affected There is no souring, no fermentation or decomposition of any kind The milk retains its freshness and purity for an indefinite lenght of time; only the steady dessication causes the least change The conditions are that the air be entirely freed from suspended particles and that the vessels be absolutely cleaned, or heated to a sufficient degree to kill all living atoms and their germs It has been shown that air sufficiently filtered through clean cotton, wool, or even allowed to settle in a perfectly quiet reservoir is inert—absolutely incapable of producing fermentation or decay Under such circumstances temperature has no effect. The protected liquid is preserved just as well at 90 Fahr as at the freezing point. A liquid keeps its fresh condition as long as a solid body from which all water has been evaporated

One point remains to be fully determined. Does milk, in common with other fluids, secreted within the body of an animal, contain, before it reaches the external air, the germs which by development and multiplication may cause the changes usually observed? In cases of disease living germs are often found in all the animal fluids and peculiar

phenomena have been witnessed in such fluids after extraction and exposure.* On the other hand one looks in vain with the aid of the best microscopic instruments for such living particles in the same fluids from animals in perfect health; at least this has been the case in the personal observations of the writer Blood has been drawn with instruments made for the purpose and kept absolutely free from living organisms, though not excluded from other agencies to which fermentation is assigned, and preserved indefinitely without heating above the normal temperature of the animal from which it came. There can scarcely be a question but that in the case of perfectly healthy cows, fed upon proper diet and drinking pure water, the milk would forever keep sweet and good, if preserved from contact and inoculation with living germs after it leaves the udder. This latter, it is true, is a difficult accomplishment, but as an experiment, it can be done, and we certainly would be unwise to assert that it will never be done in a simple and practical manner adapted to ordinary use. Some simple device may overcome the almost insurmountable obstacle now met with, and introduce a new era in the dairy business and household economy, leaving us all to wonder why it was not thought of sooner Indeed much progress has already been made in this direction, attained for the most part by common observation and practice. Thoroughly scalding the vessels—and this just before as well as just after use—keeping everything clean, and especially free from decomposing substances, beginning with the stable and ending with the arrangements for final disposition of the products, the lowering of the temperature, and finally the introduction of some tasteless and harmless antiseptic materials as dilute solutions of thymol, boracic and salicylic acids—all looking towards the prevention of infection by, and development of, microscopic germs—surely this is progress When thoroughly understood and appreciated that these and similar operations are really for the purpose of killing or retarding the development of living organisms, capable of wondrously multiplying themselves in a very short period of time, and causing the uninvited phenomena which so constantly present themselves in the absence of these precautions, and when it is further confidently known that the destroying agents are altogether foreign to the prized liquid itself, shall we not use the means already at our hand with more intelligence, in better directions, by more economical methods and with surer results? It is so now. Those who have adopted the germ theory of fermentation in all its faces, and proceed accordingly, are most and surest successful in the management of milk

We have been so long accustomed to the idea that organic bodies, and especially those of animal origin not wholly freed from water, *spontaneously* decompose, it is exceedingly difficult, without occular demonstration, to fully comprehend that in and of themselves such substances as milk, urine, blood, etc , are as stable and unyielding to the inorganic elements as the stone of which the everlasting hills are composed, yet this is the doctrine which is now and here advocated. It is the doctrine upon which is based the great domestic and commercial interests in the canning of fruits, meats, etc , and even in the dessication of these products But, it may be asked, are there *no* changes in the character of milk, in the flavor of cheese, as in "ripening," or the quality of butter, as when becoming old and rancid, not brought about by the action, direct or indirect, of living things, too small to be recognized by the unaided eye? What, for instance, is the reason that the liquid in which a bit of a calve's stomach (rennet) has been masserated in a warm place, so soon causes sweet milk to coagulate? Is this too, dependent upon particles possessed with an individuality of life quite independent of that of the animal from which the stomach came? Is indeed the calt itself indebted to such assistance from myriads of microscopic but effective agents? Is the digestion of our own dinners this day brought about, not wholly by ourselves, but by multitudes of co-laborers that have never received our thanks for their important services?

The asking of such questions may be considered fanatical, even distasteful or almost sacrilegious by some, yet he who thinks closely and observes carefully, especially if he has the time and means for proper investigation, cannot avoid them if he enters upon the subject at all The microscope shows in the solution from rennet as much of the germ theory of change as it does in the fermentation of milk when left exposed in the ordinary manner, and this evidence is convincing in a very high degree Other phenomena coincide to make the conclusion irresistable The living organism in the rennet is killed by heat it propagates itself in a suitable liquid with the astonishing rapidity of its congeners usually found outside living animals, a little used as seed permeates a great bulk of nutritive substance, as a little leaven (yeast, a plant) in the olden as well as the modern time, leavened the whole lump The rennet plant can thus be cultivated, as the yeast plant is, and possibly in a much more convenient method than at present known It is a plant living, multiplying absorbing, assimulating, dying—very low in the scale of classification, and scarcely differing from the equally low forms of animal life, yet having a definiteness and individuality which in some respects those of the highest rank, the lords of creation might do well to imitate.

Let this example suffice If the coagulation of sweet milk by the aid of rennet, can be proved to be due to the action of organisms in a living state are we not prepared to accept the same or a similar agency for any change which we observe in this, apparently, unstable fluid? But the evidence concerning some of these changes, as that of sour-

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* Professor Orth, of Gottengen, Germany, says: "Recent researches leave no doubt whatever that in some diseases the blood contains during life, though to a far higher degree after death, certain low forms of animal or vegetable life "

Dr Wm Roberts of Manchester, England, says the germ theory of disease "is now established upon a firm experimental basis "

Dr Obermeir, of Berlin, and Professor Stricker, of Vienna, find low plants, fungi, in the blood of patients suffering from relapsing fever

Dr Neftel, of New York, says: "My experiments so far lead me to the conclusion that the lower vegetable organisms can continue to live and multiply in the tissues of living animals."

Dr J G Richardson, of the University of Pennsylvania, reports the experiment of swallowing bacteria and afterwards finding numbers of them in the blood drawn from his finger.

ing, is still more direct, certainly better and more generally known. We cannot be far wrong in concluding that all the processes, through which milk and its products pass, are results, direct or indirect, of living lowly organized plants or animals Customers say the higher organized animals have something to do with certain changes of which we do not speak

What is the nature of the microscopic creatures to which such marked results are attributed? The word *fungi*, now in general use, is commonly introduced whenever any name is applied to the organisms with which we have to deal But this is applied to an immense order of plants of which the members differ among themselves almost as much as the trees of the forests and grasses of the fields They have something in common as to their food and mode of life; but differ wonderously in appearance, in size, in method of propagation, etc There are probably not less than twenty-five hundred species of fungi growing naturally in Illinois Some are found upon old logs, some on upright trunks, some on or in the soil, some only on the excrements of cattle, some on dead twigs, some on living leaves, some on the skins of animals and some in decomposing fluid substance We can hardly imagine a place on or in the earth, or organized substance of any kind, where or upon which fungi are not found of one kind or another We pride ourselves upon our cleanliness, but it is not hazardous to assert that every human being in our broad prairie state has living fungi in his mouth Nevertheless the uniquitous being are subject to prescribed conditions of growth. They must have the proper food each according to his kind, the proper amount of moisture, the proper degree of heat, etc The well informed advocate of spontaneous generation of organic species does not think of asserting that the specific forms now existing are self-produced from the inorganic elements. Whether this process is ever true or not, even the lowest forms that can be classified and so distinguished as fungi have, as all scientists admit, sprung from parents themselves. If spontaneous generation is true, it applies to still lower living atoms, which reach to caracteristic distinctness only through long series of development and so gradual change as scarcely or not at all to be noticed within the span of a human life We may therefore say the species of fungi are as distinct as those of the higher plants with which we are better acquainted

Again, the names mold or mildew are very often used in connection with such fungi as are supposed to be the cause of disease, of fermentation, putrefaction, etc But these are so general in their application that little or no information can be conveyed by their use If restricted to such species as are so commonly met with on bread, cheese, fruits, etc , the popular statements in regard to their effects are much exaggerated For a long time it was supposed that yeast used in the making of bread and beer was a submerged form of various species of true molds, but this is conclusively shown to be an error The blue mold that forms on bread is not the same or nearly the same which causes the fermentation of the flour in the process of raising The moulds of different kinds which appear around the edges of a neglected milk pan bear no relation to the much simpler form which induces the souring It is probable that the species of moulds in a restricted sense, do cause some of the phenomena to which this paper is devoted, but they are far from being the principal agents in the work When they occur on milk that has stood in a warm place for some time it may be observed that there is a conspicious absence of the putride order arising from such milk devoid of the moulds. These are, in fact, scavengers converting the partially decomposed materials into odorless carbonic acid and water

Professor Law, some years ago, published drawings of fungi which he believed were developed in the milk from germs taken by the cows in the water they drank After careful inspection of the figures it seems almost certain that an error was made in the interpretation of these growths His general conclusion may have been correct, probably was, but the organisms he observed were not those causing the difficulty It is exceedingly doubtful whether the germs of any fungus of the rank and development of the common molds ever passed through the secretory appratus of any animal The crude statements about *tilletia caries* (bunt of wheat), etc , being found in the blood of cattle, has been often enough refuted

In a recent classification of fungi (Sachs' Text Book of Botany) two orders are given including plants of lower grade than any known molds, which embrace the principal agents in these processes of fermentation and putrefaction of milk and other substances, viz: the *schizomycetes* and the *saccharomyces* The former includes the organisms known as *bacteria* and *vibriones*, all microscopic, and some of them the smallest living things of which we have any knowledge; the latter contains the yeast plants Speaking of those of the first order in a wide sense as bacteria, it may be said that they are so minute that they were entirely unknown until the microscope reached a high degree of perfection, and for this same reason their presence is still often overlooked But it is to these almost invisible objects that we must attribute the main effects in the process of which we write It is to these that cantagious diseases are mostly due, if indeed to any living thing I have been permitted through the courtesy of Dr H J Detmers, one of the United States' commissioners for the investigation of the so-called hog-cholera, to repeatedly observe in the blood, contents of the intestines, urine, etc , of diseased pigs great numbers of infinitesimal belonging to this group Upon inoculation, or in some cases upon feeding these living atoms to healthy swine, the disease was produced time and again Introducing a half drop of blood-serum containing these bacteria into a vial of pure milk the latter soon became swarming full of the same objects Again transferring a minute portion of the infected milk to fresh material like the first, multiplication of the bacteria took place, and inoculation from the second vial in the ear of a pig produced the disease in about the same length of time as before To see the form of these organisms a glass of excellent definition was required, and a power of at least eight hundred diameters Yeast cells (of bread) are mountains compared with them. If any living things find their way through the animal tissues and escape, as with the milk, we may safely conclude it is something of this description There is no evidence that higher and larger fungi as ordinary molds are ever developed from the minute forms described

When fresh milk from healthy cows is placed under a high magnifier (500 to 1,000 diameters) the thin stratum appears violently agitated by currents caused by evaporation, etc.,

and by the molecular, oscillating motion known as the Brownian movement, but no bacteria can be found. Examine the same milk after it has stood in a warm place a few hours, and before evidence of acidity except to litinus paper is presented, a few bacteria may be observed; before coagulation they are quite common and finally become in some cases excessively numerous. Milk put in well-stoppered, scalded vials kept in a temperature of from 80 deg. to 90 deg Fahr sometimes becomes very sour but suffers no further change. But frequently after souring the inclosed liquid becomes putrid and highly odoriferous. Upon examining two such as those the difference can be ascertained. The former contains one kind of bacteria, the latter two The first is at the outset minute and spherical or cylindrical and composed of joints which are often more or less bent upon each other Its movements are of an oscillatory character, with slight or no progress in any direction. The second is not unlike the first in shape, though not so distinctly composed of easily-separated joints, but it moves with an endwise sliding motion of apparently, under the microscope, great rapidity. One is the lactic ferment, the other is the putrifactive ferment They may occur together or either may exist without the other but the lactic organism appears either more common or more active in its work

In one experiment three vessels were placed in the same tin vessel which closed tightly Milk fresh from a cow was placed in all of the inclosed vessels, which were of glass with open top. In number one the blade of a pen-knife was dipped which had previously been inserted in sour milk swarming with the lactic ferment In number two a minute amount of milk just coagulated was placed, and number three was left as it was Coagulation took place in the order named with about two hours intervening between the first and second and six hours between the second and third. After two days a mold whose creeping filaments were previously observed, appeared on the first and after one more day upon the second but the third became wholly dried before the mold fruited. This mold proved to be *mucor mucedo*

Other experiments confirmed the announcements made by others that the bacteria are disseminated slowly through the air while mold fungi fly readily everywhere The former are especially distributed with liquids and remain though dried in contact with solid surfaces, ready to commence action at any time nutritive substances reach them The minutest quantity of old milk, not thoroughly scalded, may infect any bulk of fresh material

The following paper, by G. E Morrow, Professor of Agriculture, Illinois Industrial University, was read:

DAIRYING AS A PART OF GENERAL FARMING

This meeting is held in a part of the State in which the dairy is a leading agricultural interest, if indeed it be not decidedly the chief; and in a city which is most widely known as a "dairy center" The active and influential members of the association are those who are directly interested in dairying, as their chief or exclusive business It is natural and proper that most of the discussion should be on the topics in which the experienced dairymen—those who make milk, or butter or cheese production or sale their chief or only business—feel the greatest interest But we should not forget that over more than three-fourths of the State, on a very large majority of the 200,000 farms of the State, dairying, in the sense in which those present use the word, is almost or quite unknown Yet, of the 700 000 cows, in round numbers, owned in Illinois, at least a majority are found outside the "dairy region" of the State Many of these are owned by residents of towns and villages, and many others by farmers who keep them mainly for rearing calves, often not milking them at all; but we still have an immense production of milk and of butter by those who never think of themselves as dairymen, and are never thought of as such; and who manifest little interest in the proceedings of such associations as this

It is also to be remembered that dairying, as a somewhat prominent industry, is spreading into new sections of the State; that many farmers who have grown grain, or beef, or pork, as their only products, are thinking whether the dairy does not offer better profits.

In this paper, I can only suggest, and not fully discuss, a few of the things which these facts and the present condition of the dairy interest generally, make it worth our while to think about I cannot expect some of my statements to be accepted by all.

Starting then, with the general propositions that it is entirely possible, even if not probable, that any industry may be overdone; that a considerable diversity of production is undoubtedly best for a country or for a large community, and generally for an individual farmer; that in farming, as in other businesses in this country, it is coming to be increasingly important that all the resources, whether in lands or in labor, shall be made the best use of during as much of the time as possible, and that future profits from farm products generally, including dairy products, will probably not be as large as they have often been in the past, I believe the future increase of dairying will be more in the way of its being made a more or less prominent feature of farming, and that a less proportion of the dairy products will be produced by those who give to these exclusive attention. There are very many cases in which, undoubtedly, it will be best to make milk almost or literally the only article sold from the farm, but I firmly believe there are many farms and some localities from which better returns will be secured for the future by increased attention to grain raising even; certainly to grain raising for home consumption by increased attention to rearing and feeding some cattle and hogs or sheep. It is not long since very many successful dairymen insisted that, however true in theory, it was not true in practice, that dairymen should aim to rear their own cows There has been much change of view as to this; but there needs to be more, until, as it seems to me, it shall be the exception and not the rule for dairymen to buy cows

The experiences of the year have made us see more clearly than some of us saw even a year ago, that it is not at all a matter of course that comfortable profits will come to the dairyman; and I repeat what I have before said, that I see no reason to believe we are again to see such large average returns from the dairy as we did for a considerable series of years. Dairy farmers must carefully consider whether or not they can produce the grain feed for their cows cheaper than they can buy it; whether or not they can afford to continue to make a half or a whole day's work of delivering milk to the depot

or the factory; whether or not even the manager of the farm must do something more than "see to things;" whether or not "deaconing" calves is the best course.

Probably there will be little dissent from the suggestion that those who have not been largely engaged in dairying, and communities in which other branches of farming have long been pursued, should make the change into dairying only with care and slowly; that it will rarely be wise to at once get all the farms in grass, and as soon as possible fully stock them with cows. But I advise this continuance of former work, not as a temporary course, while a trial is being made, and such farmers are learning a new business, but as a permanent policy in regions in which stock rearing and feeding has proved profitable in the past, and where skill and some reputation has been acquired and good facilities for such farming accumulated. I cannot count it wise to look forward to abandoning this, except in special cases

For years I have counted it one of the most important helps to continued prosperity for our cheese-producing interests, that more attention be paid to developing and supplying, in the best possible way, the home demand for cheese Over a very large part of Illinois I see no good reason why each county should not produce at least as much cheese as its population consumes; why one or two or three factories should not be mainly engaged in making cheese for the local markets With the direct sales which could thus be made certainly as good net prices should be obtained, and it ought to be easier to obtain a local reputation than to successfully compete with the whole country. And so I should be glad to see new cheese factories in many counties of the state; not great, costly buildings and arrangements for using the milk of 1,000 cows, but neat, cheap, economically managed factories, the milk for which should be largely furnished by neighboring farmers, into whose minds might never come the thought of exclusive dairying, but who should find it payed them well to keep anywhere from half a dozen to two score good cows, well cared for, the milk from which, or a part of which, should be daily carried to the factory by the team of the factory owners, or some neigebor living further from the factory, while the farmers go on with their "general farm work"

If it seems that I have understated the advantages of the dairy as an exclusive reliance for the farmer, I make partial amends by magnifying its importance as a help to profitable farming by those who will continue to make some other branches their chief reliances So long as the custom continues of making almost all American cheese after one general model, it is to be expected the factory system will practically abolish farm making of cheese; but this will not be true as to butter and milk. Farmers everywhere will need and will use milk and butter for their own tables, and very many of them will continue to make butter for sale As the country grows older, and the villages and towns grow larger, there will be a larger proportion of the whole population who will need to buy their supplies Probably the milk supplies of cities and larger towns will continue to come mainly from those who make this a special business; but there is no reason why thousands of general farmers should not make first-class butter, and, securing a local reputation for so doing, receive a good price for it The leading hotel of the neighboring town must get its butter somewhere, as must its leading citizens, and there is no reason why a neighboring farmer should not supply them at something above the regular price As good butter can be made in a private dairy as can be made at a creamery. That it is not so good as a rule, is clearly true, but it can be so made, and is by a good number

Where farmers expect to make butter for their own use, and often to have some to sell, it is clearly only good economy to provide such facilities as will make it possible to have the product good, and very often it will be found little more costly to provide for making twice the quantity absolutely necessary The great mass of the butter made in the country will long continue to be poor in quality, and most of it made during the summer The shrewd farmer will adapt his course to meet these facts, and most often, it would seem he can best do this by making good butter, if any, and by making most of what he will need to sell, in winter The arguments in favor of winter dairying, where butter is to be made in factories, are much more generally admitted than they were a few years ago But if they have weight in such cases, they have equal force in the case of the farmer His cows must be kept in any event, and they ought to have nearly the same care whether giving milk or not. As a rule ne will expect to have milk and butter enough for his own family, and if this much can be cared for, more can be. The special dairyman may be but little more busy in summer than at any other season, but for the general farmer midsummer is not only the time when it is most disagreeable to milk and care for it, but it is also the season when, both on the farm and in the house, most is to be done It is easier to provide for the proper care of milk in cold weather than to guard against the ill effects of extreme heat

Another class, which may well give increased attention to dairying, is that engaged in rearing beef cattle more or less largely Doubtless with cheap lands and comparatively dear labor, the practice of allowing calves to suckle the cows, receiving all the milk, has often been the most profitable But I cannot believe this is to continue. A good cow can and will give more milk than is necessary for rearing her calf if it be otherwise well fed. Either by the plan sometimes followed, of giving one cow two calves and milking the dam of the other, or by milking and feeding skim milk, supplemented with other food, it seems certain the time is coming in this state when a more profitable use can be made of the milk than to have the calves take it all

For such farmers, as well as for "general farmers" almost universally, it seems certain the best cows are those cows which combine milk and meat producing ability in good degree, even if they do not in either reach the highest point

That I may not be misunderstood, I may say in the way of summary: I do not at all believe the teaching that a farmer should, necessarily, produce everything he uses, if this be possible; if he can buy cheaper than he can rear or manufacture, it is best economy to buy But where there is a question as to which is the cheaper course, it is safer to lean to the side of home production I would not advise a farmer to fritter away his time and strength in producing small quantities of a multitude of products; he will do best to have one, or two, or three things to which he gives chief attention; but I grow to believe more and more strongly, that it is scarcely ever safe for a series of years, to depend on any one speciality, and so I would always have "more than one

string to my bow" I do not take a hopeless view of the prospects of dairying; it has as bright an outlook as perhaps any branch of agriculture Money is to be made from the dairy for long years to come; but, as I read the indications, it will rarely be wise for communities or individual farmers, unless in exceptional circumstances, to make milk and its products the only source of expected profit Grain-growing and stock-rearing farmers will often do well to make more of the dairy than they have in the past. A very large part of the butter product of the country will continue to be made at farm houses. Winter butter making has some special advantages for the farmers as well as for the creamery proprietors. Cheese factories may profitably be established in many localities where they are now unknown, especially with a view of developing aud supplying the home demand For the great mass of farmers, those cows are best which are well suited for both meat and milk making.

LARGE MILKERS.

Much has been written and said of late, in regard to the different breeds, as regards their milking qualities. Without any prejudice we give below the yield of a Holstein cow the property of Dr J Tefft, of Elgin, Illinois She is an imported cow, and is booked in the herd book, under the name "Zwaan," and from the figures, which are taken from actual daily weights, she certainly ranks high among the great milkers of the country:

From May 12th, 1877, to March 12th, 1878, inclusive, her yield was 12,610½ pounds or about 1,462 gallons The time being 298 days, would make a daily average of nearly five gallons per day. May 5th, 1878, she again became a fresh milker and now bids fair to exceed her last year's record.

STANDARD QUANTITY AND QUALITY OF MILK.

QUANTITY —Borden's standard of eight and five-eighths pounds per gallon, is now taken and accepted as the standard for milk, not only in our own country, but in all Europe

QUALITY – The executive committee of the State Dairymen's Association, after many experiments carefully made, have decided that hereafter the following shall be consider by them as the standard quality of milk in Illinois. Water, 87.5; solids, 12 5, in a scale of 100 parts

ILLINOIS WOOL GROWERS' ASSOCIATION.

FREEPORT, STEPHENSON COUNTY, Ill.
STATE FAIR GROUNDS, Sept. 18th, 1877.

The Illinois Wool Growers' Association was called to order by President A. M. Garland, at 7:30 p. m.

Reading of records dispensed with as the matter had been before the public in printed form.

The first business in order was the bi-ennial election of officers, which resulted as follows:

President—A. M. Garland, Springfield.
Secretary and Treasurer—V. P. Richmond, Moro, Madison county.

Vice President,	1st	district—	Daniel Kelly, Wheaton, DuPage county.
" "	2d	"	H D. Emery, Chicago, Cook county.
" "	3d	"	Ebenezer Ware, Waukegan, Lake county.
" "	4th	"	A. S. Alden, Sycamore, DeKalb county.
" "	5th	"	J. L Moore, Polo, Ogle county.
" "	6th	"	W. H. VanEpps, Jr., Dixon, Lee county.
" "	7th	"	E E Gorham, New Lenox, Will county.
" "	8th	"	F. E Day, Streator, LaSalle county.
" "	9th	"	John Turnbull, Elmira, Stark county.
" "	10th	"	Graham Lee, Hamlet, Mercer county.
" "	11th	"	Robt. M. Bell, Jersey Co., P. O Brighton.
" "	12th	"	J. A. Meginson, Jacksonville, Morgan Co.
" "	13th	"	S. R. McFadden, Atlanta, Logan county.
" "	14th	"	J. H. Pickrell, Harristown, Macon county.
" "	15th	"	H. J. Bowman, Tower Hill, Shelby Co.
" "	16th	"	O. B. Nichols, Carlyle, Clinton county.
" "	17th	"	Jas. M. Scott, Belleville, St. Clair county.
" "	18th	"	R. L. Robertson, Sparta, Randolph county.
" "	19th	"	N. Bristow, Belmont, Wabash county.

Prof. Cyrus Thomas read the following essay which was listened to with marked attention by the largest number of wool growers that have met for many years:

SHEEP INSECTS.

Several months ago your secretary wrote to me, making some inquires in reference to certain diseases affecting sheep, supposed by many to be produced by insects Feeling unable at the time to add anything to what I supposed to be thoroughly treated of in works on sheep, I excused myself as best I could, indicating my willingness to be present at the next meeting of the Association and give what information on the subject I might be able to.

Unfortunately for me, I am now called upon to fulfill that promise, and I fear the only prominent fact I shall be able to make clear is my thorough want of knowledge of "Sheep Insects."

I have, therefore, concluded that the best method for me to get out of the scrape is, to take advantage of the situation and claim that, as it is the time and place of the State Fair, I should make my subject more general; and, after telling what little I know of sheep insects, branch off, if necessary, to one or two other groups of insects which affect more generally our agriculturists.

In my own defense, allow me to say that, after my promise to Mr. Richmond, I gave the subject sufficient thought and examination to appreciate the difficulty; and, feeling that the subject belonged more properly to the province of the vetinary surgeon than the entomologist, I wrote to the editor of the *Prairie Farmer*, suggesting the propriety of having some one familiar with the diseases of domestic animals write of this matter, but for some, doubtless very good, reason, my proposition failed to bring out the desired article.

The fact is, the subject is one that lies on the border-line of three different professions —that of the wool-grower, the vetinary surgeon and the naturalist—and, consequently, has never been investigated in that thorough scientific manner which it deserves, and which will enable the wool-grower to turn the knowledge thus gained to practical advantage.

All, therefore, that I can do at present, as I have not had an opportunity of investigating the matter practically, is, to tell you something in reference to the kinds, nature and habit of the insects and other parasites that infest sheep; and, in order to make clear what I say, I shall first have to allude to some generalizations respecting insects which attack domestic animals and other quadrupeds.

Mammals, or such animals as man, the horse, cattle, hogs, sheep, dogs, cats, etc., are subject to the attacks of a large number of minute animals belonging to the great sub-kingdom *Articulata*, or articulate animals

Those which can in any sense be called parasitic belong chiefly to three classes; the *Insecta*, or insect class; *Arachnida*, or spider class, and *Entozoa*, or the intestinal-worm class; thus, as will at once be seen, spreading over a much broader range in the animal kingdom than that to which the labors of the entomologist are usually strictly confined. For example, in the insect class we find such parasites as fleas, bed-bugs, lice, bot-flies, sheep-ticks, etc ; in addition to which there are many others, not true parasites, which direct their attacks more especially against man and domestic animals—as mosquitoes, the *Tabanidæ*, or horse-flies; the *Simulidæ*, or black gnats, etc

In the spider class, the principal enemies of man and beast are found among the mites and ticks, but these are counted by the legion, for almost every animal has its peculiar species

In the class embracing the intestinal worm we find whole groups of species which appear to have been formed for the express purpose of making the internal parts of mammals their special habitation—the stomach, the intestines, the muscles, and even the brain, have all their peculiar species

In order, therefore, to investigate thoroughly the various insects and parasites that attack sheep, it is necessary to examine into each of these three classes containing almost numberless species, some of which are so minute that a microscope of high power is necessary to bring to view their generic and specific characters

Having given this brief outline of the classes to which the insect enemies and parasites of the sheep belong, I will mention the chief characteristics of the most noted species As a matter of course, I will omit from present consideration such as are simply troublesome by their stings or bites.

THE SHEEP BOT-FLY (*Œstrus ovis*)

Among insects there are a very large number which are distinguished from all the rest, chiefly by the fact that, with the exception of a few which are without wings, they have but one pair of wings, most other insects having two pairs, and that their mouth is formed into a kind of tube for sucking, instead of biting; and that when young they are maggots or maggot-like worms. All such insects are placed in an order named *Diptera*, or, literally, "two wings" In this order are found at least two species which infest sheep, often doing them considerable injury One of the most noted of these is *Œstrus ovis*, L , or the sheep bot-fly

The family *Œstrida* which contains the bot and breeze flies, is very singular in some respects Although in general appearance somewhat resembling a common house-fly, yet the difference is sufficient to be noticed at a glance by the unscientific observer As a general rule, the body of the fly is stout and hairy, somewhat like that of humblebees Their mouth is very imperfectly developed In the sheep bot-fly this organ is so reduced that it is impossible for the insect in its perfect, or fly state, to take nourishment, showing thereby that it was intended by nature that its period of imbibing food should be confined to its larval or maggot state The larvæ of these insects are generally thick, fleshy, footless maggots or worms, which have the hinder margins of the segments or rings of the body furnished with minute spines, which point backward, enabling them to move readily in the confined situations in which they reside The head is usually very small, and the mouth in some consists simply of fleshy tubercles, as those which reside in the skin of animals, while in those species which reside in the stomach and nostrils, it is furnished with two little hooks, by means of which they are enabled to hold on to their positions. Their great peculiarity consists in the strange situations they select to pass their larval state, which is the most important part of their existence, their perfect state being devoted wholly to propagation The *Gastrophilus equi*, or horse bot-fly, as you all know, selects the stomach of the horse as the abode of its larva—nature having furnished it with that instinct which directs it where to deposit its eggs, that they may be carried to the spot where the larva will be developed and find suitable nourishment.

The *Œstrus ovis*, or sheep bot-fly, on the contrary, selects the nostrils of its victims as the most appropriate place to plant its offspring.

The *Hyporderma bovis*, or ox bot-fly, plants its eggs in the skin of cattle, where they form tumors, in which the larvæ dwell Another species of this same genus (the *Hypoderma tarandi*) is found in the skin of the reindeer

The species of *Cuterebra* inhabit the internal organs of squirrels, rabbits, mice, and other small animals Other species infest dogs and other quadrupeds, and even the frog is said to have its bot fly Nor is man himself wholly exempt from their attacks.

But at present we are concerned only with the history and habits of the species which infest sheep. As a general, and until recently supposed universal, rule, the flies deposit eggs from which the maggots are hatched But recently Prof. Riley, on the authority of Mr Cockrill (who produces the statements of two other witnesses), and some facts known in regard to the habits of this species, arrives at the conclusion that it deposits living young While the usual habits of the species of this family appear to be opposed to this idea, and the great difficulty of making direct observations might lead us to doubt the correctness of this conclusion, yet it is well-known to entomologists that similar departures from normal habits do occur among insects, and the difficulty of the egg maintaining its situation until hatched would seem to favor this idea. Repeated dissections of the gravid females would appear to be the only feasible means of determining this question This appears, from Prof. Riley's statement, to have been done in two instances, showing living young The parent fly deposits her eggs or larvæ, as the case may be, in the nostrils of the sheep As soon as the larvæ are deposited or hatched, they at once commence to make their way up the nostrils to the frontal sinuses, causing great irritation to the lining membrane; here they attach themselves firmly by the little books with which the mouth is furnished, and feed on the mucus which is always found here. While young they are of a creamy-white color, except two brown dots on the hind segment, which are the breathing pores. When full-grown they are darker, varying from a dirty white to a brown, the hinder portion being darker than the front; these differences in color represent more or less distinctly, rings corresponding with the segments, not reaching around the body, but leaving a pale space along each side which is marked by a row of brownish dots representing the breathing pores The under side is marked between the ventral rings with bands of minute dots or tubercles, which are tipped with little short spines, which, if examined with a magnifier, are found to be of a reddish color, and to point backward It is now shaped somewhat like a beet largest behind and tapering to the head, which is quite small Kollar states that it is without the ventral spines usually found in the larvæ of this group of insects, but, although minute and not easily seen, they are, nevertheless, present, for without them we could hardly explain its power of moving forward on the unctious mucous membrane

Having entered the nostrils in the middle of the summer, worked its way to the frontal sinuses, and gradually attained its full growth, it remains here till the following spring, when it loosens its hold and works its way down the nose, producing great irritation in the membrane and uneasiness in the animal, and drops to the ground It rapidly burrows into the soil out of view, and in a short time, two or three days at most, transforms into a chrysalis It remains in this state six or eight weeks, and then comes forth from its hiding-place a true two-winged fly, somewhat larger than the common house-fly, but resembling it in general appearance The head and thorax are brownish The abdomen consists of five segments, or rings, which are velvety, and variegated with brown and dull yellow, or, as Youatt has expressed it, "tiger colored on the back, being prettily striped and marked"

As before stated, its mouth is now so imperfect and undeveloped that it may be said to have none It is, therefore wholly unable to imbibe nourishment, its only mission now being to produce and provide a place for its offspring

Such, in brief, are the characteristics and history of this pest of the sheep-fold a history which leads up to the threshold of those difficult problems in the plans of the infinitely wise Author of Nature; problems which we shall probably be unable to solve until human investigation has brought to light the most profound mysteries of Nature, and is able to weave them all into one contigious web

The question raised by Messrs Youatt and Clark, as to whether these insects are really injurious to otherwise healthy sheep, I leave to practical sheep-growers to decide, taking it for granted, however, that the very large majority of sheep raisers differ from those able veterinarians on this point, and very decidedly prefer that their flocks should always remain exempt from their attacks It is more than probable, however, that fatal results are often attributed to them which are due to other causes, and that they, in fact, seldom cause death to sheep otherwise healthy

The remedies may all be classed under three heads.

1st Change of situation to where they are less liable to attack

2d. Measures designed to prevent the deposit by the mother fly.

3d. Removing the larvæ or grub after it has become seated.

That some situations are more infested than others, I think it will be found true. Kollar, who wrote for the benefit of Austrian agriculturalists and gardeners, speaking of this insect, states that young flocks are sometimes attacked by this plague when they frequently graze near woods." I am satisfied that high, dry, firm, open, airy situations will be found much less infested by this pest than low, moist situations, where there is thick undergrowth and close, hot air.

There are various means adopted which are designed to prevent the deposit of the eggs or larvæ by the parent fly The old and well-known method of taring the nose is, perhaps one of the best and simplest The removal of the grub after it has become seated is difficult; putting something into the nostrils to cause severe sneezing is, perhaps, the only plan worthy of trial, for the barbarous method of trepanning the skull should not be resorted to. But the matter of remedies I leave to the practical sheep raisers and the veterinary surgeon, as I claim no practical knowledge in this respect

It is sometimes supposed, by those who have not studied the character of the grub, that it may bore through the bony wall of the skull into the brain; but this is simply an impossibility, as it has no organs or weapons with which it can bore.

THE SHEEP TICK (*Melophagus ovinus, L.*).

The next species to which I call your attention is the "sheep-tick" (*Melophagus ovinus*), which, notwithstanding its name, is not a tick in the true sense, but a wingless fly, and belongs to the same order—*Diptera*—to which the bot-flies belong, but to a different and very singular family, which entomologists have named *Hippoboscidæ*. These insects are distinguished by their flattened and somewhat horny bodies, the horizontal, flattened head, which is received into the front part of the thorax, and the rudimentary antennæ. Some of them possess wings, but others have these members aborted, or are entirely without them, as in the case of the sheep-tick. The front part of the body of this species is unusually small; the head is somewhat wider than the thorax, which is very narrow; the mouth, or proboscis, is as long as the head; the limbs are short and thick, and the abdomen, "which is broad and hairy is not divided into rings, as that of flies usually is" It is of a pale reddish color; the abdomen is lighter, with an irregular white line along each side, and a red spot on the back.

The mode of reproduction in these flies is very singular and unusual They produce neither eggs nor larvæ; the egg-duct or tube has an enlargement which produces a milk-like secretion for the nourishment of the larva, or young maggot; the egg -for they usually give birth to but one or two young—passes from the ovary to this enlargement and hatches into a larva, which is nourished here, during this stage of its existence, upon the milk-like fluid before alluded to, until it passes into the pupa, or chrysalis state, at which time it leaves the body of the parent Instead, therefore, of producing eggs or larvæ, they produce pupæ Therefore, strange as it may seem, we see in this very low type of animal life a somewhat close imitation of the method of reproduction observed in the higher animals

The remedies for this pest may be placed under two heads as follows:

1st A change of situation similar to that recommended in the case of the bot-fly.

2d Measures for removing the ticks

So far as the latter are concerned, I suppose the wool-growers present are doubtless familiar with the remedies suggested by Randall, Youatt, Clark, and other writers, which consist in dipping in decoctions of tobacco, arsenical solutions, applications of mercurial ointment, etc. To these I have nothing to add, as these, if properly followed, will suffice to eradicate them As the only cure after they are on the sheep consists in eradicating the insects, this must be left to the ingenuity and practical knowledge of the shepherd I have seen it stated somewhere that kerosene may be used with success, but I am not sufficiently acquainted with sheep to tell to what extent such remedies may be applied with safety.

THE SCAB MITE (*Dermatodectes ovis*).

The scab, as you are all aware, is a skin disease analogous to the mange in the horse and itch in man, and, like these, is produced by a very small mite It was for a long time supposed that this mite was produced spontaneously, by an unhealthy or unclean condition of the flocks, or from insufficient or improper food, etc , and not from a preceding parent According to Westwood, two such able entomologists as Burmeister and Kollar leaned to the idea of equivocal generation in the case of these parasites But such erroneous ideas as these in reference to these mites have at last been corrected—at least, so far as authors and naturalists are concerned—as it is now known that they are produced from eggs deposited by parents similar to themselves

These little parasites are not insects in the true sense, but belong to the *Arachnida*, or spider class, which contains not only spiders, but also scorpions, grandaddy long-legs, ticks and mites, and may, with few exceptions, be distinguished from true insects by the fact that they have eight legs, while insects in the perfect state have only six; but among the mites there are sometimes exceptions to this rule, as some species appear to have but six legs This class is divided into several orders one of which—*Acarina*—contains the various kinds of mites, of which there is an immense number The order is again divided into several families, of which one—*Acaridæ*—contains the various sub-cutaneous, itch-neumon, cheese, itch and gall mites

It is to this family the species now under consideration belongs, and which is placed in the sub-family, *Sarcoptida*, which is distinguished from the other groups of the family by the striated or finely grooved skin, by the suckers with which the feet are usually provided, and by being without eyes

Our parasite has received various scientific names, according to the fancy or opinion of authors; but, as the further history of its classification is unnecessary now, I will mention but two of these:

1st *Dermatodectes ovis*, sheep-itch-mite of Gerlach, by whom it was considered as peculiar to sheep, but the most recent authority restores the name *Psoroptes equi*, horse-itch-mite of Gervais, considering the species infesting the horse, cattle and sheep as identical

It is distinguished from the itch mite of man (*Sarcoptes, scabiei*, Latr) by two or three important characters The four anterior legs and two of the hind (at least) in the males of each species are furnished with sucking disks, placed on comparatively long pedicels or stems In the itch-mite of man, so far as I can ascertain, these pedicels are only one-jointed But the most important difference is that the mouth of the human itch-mite is furnished with sharp, scissors-like jaws or nippers, with which they can readily cut into the skin, and form their sub-cutaneous burrows The sheep-mite is furnished with comparatively slender, lancet-like mandibles, to the sides of which the little palpi, or mouth feelers, are glued, thus forming a sort of tube, one part of which is capable of piercing But while this peculiar form of the oral apparatus enables them to pierce and suck, it deprives them of the power of cutting; and hence, notwithstanding the general opinion to the contrary, they are not subcutaneous in their habits, and do not form true burrows, as the human itch-mite

It lays its eggs on the surface of the skin, to which they adhere by a gluey matter The length of time these require to hatch in such situations is not positively known; but some, placed in a bottle kept to the warmth of the body, hatched in fourteen days The

young which are produced from these have only six legs; but after several changes of skin, or moultings, they acquire eight, which is the normal number of the class With the little sucking disks of their feet they are enabled to cling firmly to the skin of the sheep. By piercing the skin with their lancet-like mandibles, irritation and a species of inflamation of the skin follows, and an exudation takes place, which ultimately forms the scab As stated by a writer on this subject, "Examination will disclose spots on the skin, white and hard, the center marked with yellow points of exudation, which adheres to the wool, matting the fibres together. The wool may be firm on these spots, and no scabs are seen in this stage. Then the yellow moisture evaporates, gives place to a yellow scab, which adheres firmly to the skin and wool Raw places appear at points which the animal can reach with its teeth and hind feet The disease is complicated in summer by the presence of the larvæ of the blow-fly, the maggots burrowing under the scab "

The remedies are reduced to one class—those which have for their object the destruction of the mites and their eggs In addition to the applications of arsenical and mercurial ointments, arsenical and tobacco washes, which are so generally recommended, the writer from whom I have just quoted strongly recommends a wash of dilute carbolic acid But you are all probably far better posted in this matter of remedies than I am, and expect from me at present nothing more than the natural history of these parasites

THE LIVER-FLUKE (*Distoma hepaticum*)

In addition to the groups or classes of animals including the species mentioned, there is another group of minute and singular forms, which has long been, and still is, an eyesore to naturalists, on account of the difficulty of locating it in a regularly classified system They are generally known in scientific works as *Entozoons*, and by the common name of "intestinal worms," which signifies the same thing as the scientific name These include such animals as the tape-worm, flukes, ribbon-worms, hair-worms, etc A few of these attack sheep, of which we may notice, as the most important, the "liver-fluke" (*Distoma hepaticum*), which inhabits the gall-bladder or ducts of the liver in sheep, and, as believed, causes the disease known as the "rot" This species, which belongs to the order *Trematoda*, or "suctorial worms," derives its common name from its resemblance in form to the flounder, of which "fluke" is a Scotch and old English name. It is somewhat broad and flattened, of an elongate-ovate or long-egg form, somewhat pointed at each end It is usually nearly an inch long, often much less, but occasionally more; its breadth, at the widest part, which is towards the front, is about half its length Its color is usually that of the organ in which it resides. It belongs to a very low type of beings; having neither eyes, true respiratory organs, heart, nor any other organ of special sense: the sexes are not even distinct, and the alimentary canal does not even pass through the body, but, dividing and subdiving, permeates all parts of it, distributing the imbibed nourishment, which needs little or no assimilation to adapt it to use in forming the materials of the body. They produce a kind of spore or egg; but its subsequent progress, so far as is at present known, presents one of those singular life-histories occasionally met with in the lower orders of animals In some way, not well understood, this egg or germ spore makes its way to the external world; its history from this time until it is hatched is unknown; but moisture in some form is probably necessary to its development It is next found in the body of some mollusk, as the snail, or some aquatic insect, where its form is so different from that of its after life, that it was long considered as appertaining to an entirely different group of animals From these in some way not yet ascertained, it passes into the sheep It probably escapes from the mollusk or insect to herbage in moist places, or water, and is taken into the stomach of the sheep with its food or drink, and passes through the lacteals, and makes its way to the ducts of the liver

In contradistinction to this history, which is from the naturalist's side, it is proper to state that Youatt, and other writers on sheep, distinctly affirm that flukes have eyes, and even figure them: but what possible use they have for these organs, in the situation they occupy, it is impossible to say: and, moreover, without nerves, of which there are mere traces, these organs would be entirely useless, even if they were in the light What this author considers the heart and circulatory system, is doubtless the water vascular system found in these animals, which is supposed by many to represent the system of respiration in higher animals He also supposes that the eggs or spores, after being cast off, remain undeveloped until taken into the stomach with the food.

As before stated, these internal parasites are supposed to be the cause of rot in sheep, though many persons are inclined to believe they are a consequence, rather than cause, of disease But all appear to agree that this disease is connected with the condition of the soil, or state of the weather, moisture being the element most likely to produce it This corresponds exactly with the theory of its life-history which I have presented, and indicates the best means of preventing it, to-wit: give them well-drained, open, airy pastures, and proper protection in damp and rainy seasons. It is more than probable the condition of sheep is often attributed to this disease, when it is due to other causes Randall asserts that he has never witnessed an instance of rot in the United States, yet I notice in the annual reports of the National Agricultural Department statements of large numbers dying annually of this disease

For the numerous remedies which have been suggested, I refer you to the various works on sheep, and to the veterinary surgeons.

HYDATID OF THE BRAIN (*Cœnurus cerebralis*).

Another very singular and fatal disease, known as turnsick, staggers and sturdy, or more correctly, "hydatid of the brain," is caused by a parasitic worm belonging to the same class as that just mentioned. On examining the brain of a sheep which has died from this disease, a watery bladder, sometimes quite small, at others as large as a hen's egg, is found It possesses a number of heads, which are distributed over the bladder, each having an oval orifice, surrounded by minute, sharp hooks, within a ring of sucking disks On account of its numerous heads, it has sometimes been called *Hydatis polycephalus cerebralis*, or the many-headed hydatid of the brain. With the sucking disks they fasten themselves to the brain, and, by means of their hooklets, which appear to be a

kind of cilia, it is supposed they imbibe food The fluid of the bladder is usually clear, but sometimes turbid, when, if carefully examined with a microscope, it will be found to contain a number of minute, worm-like bodies or animalcules

It has now been ascertained that these cystic or bladder-worms, so far as their history has been traced, are early stages in the lives of tape worms, these heads which are seen attached to the bladder ultimately forming the head of the tape-worm.

Prof Huxley has presented strong reasons for believing that the minute worms seen in the bladder ultimately become the joints of the tape-worm, each of which, in turn, is capable of producing, under favorable circumstances, another cystic, or bladder-worm But the strange part of the history of these singular animals is the fact that these two stages of life cannot occur in the same animal; or, in other words, the cystic or bladder-worm in one animal will never develop into the tape-worm until it passes into another animal. For example, the bladder-worm found in the flesh of the hog becomes the tape-worm in man; the bladder-worm of mice becomes the tape-worm in the cat; that of the hare the tape-worm of the fox; while that which produces hydatids in man becomes the tape-worm in the dog

Taking these facts as a guide, I am led to believe that the bladder-worm found in the brain of sheep is but the early stage of a tape-worm found in some other animal; probably the wolf, dog, or some carnivarous animal How it escapes from its bony prison, or is taken up, I do not know; but they are very tenacious of life, and may possibly pass into the stomach of other animals long after the death of the sheep, and still be developed. It is possible the history of this species has been traced: but, if so, I am not aware of it

No adequate remedy has so far been found, nor is it likely there will be; but, fortunately, its occurence in this country appears to be rare

In addition to the foregoing, there are few other parasites which occasionally infest sheep to an extent sufficient to do them considerable injury. Of these I simply mention the following;

Tænia plicata, or the folded tape-worm I am unable to give the history of this species; nor am I aware that it has ever been ascertained, From what we know of the life-history of other species, it is difficult to account for the presence of a tape-worm in a purely herbivorous animal So far as known, the cystic, or bladder-worm, which is the young or preliminary stage of the tape-worm, is always found in a different animal from that in which the mature tape-worm occurs.

Ascaris lumbricoides --The round worm of the intestine. These are worms which inhabit the small intestine; and, according to Mr Spooner—on whose authority they are introduced here- it Would appear to be the same species as that in man; but it is more than probable that the nematode worm observed was some other species of *ascaris* These species are said to give rise, especially in lambs, to severe diarrhœa

Such is a brief account of the most important and injurious insects and other parasites that effect sheep, so far as I have been able to ascertain As at first stated, I have really no practical knowledge of this subject, and, therefore, do not pretend to give any other information in regard to it than what is derived from the scientific standpoint, and even that but very imperfectly. That I may have ommitted some very important species, is quite possible; but be this as it may, I have included all the important ones I am aware of. At some future time, if an opportunity occurs for investigating these parasites more thoroughly, I propose to do so.

But, before closing, it will probably be expected that I say something in reference to the, ' foot-rot,'' as I understand some discussion has arisen as to its cause So far as I can ascertain, the origin of this disease has never been attributed, by any author, to insects or parasites That the affected parts are often infested with maggots, is admitted by all; but, instead of the disease being caused by these, they are attracted to the spot by the diseased condition of the foot As a matter of course, when they once obtain a foothold, they aggravate the disease

As I am not pretending to give a history of the disease of sheep, nor the means of curing them, I must leave to the veterinary surgeon the matter of remedies, except so far as indicated by the character of the parasites themselves. But there is one general fact which presses itself upon me at almost every turn in the examination of this subject: and that is, that one prolific source of parasites and disease in sheep is moist soil and damp situations, especially where rank woods and undergrowth abound In such situations, the bot-fly, sheep-tick, fluke, and the various nematode and trematode parasites, are most likely to occur. Here the ''foot-rot'' will probably be found much more common than in well-drained, dry, airy, open situations These facts appear prominent throughout all the best works and essays on sheep husbandry. The situation therefore, becomes the first and great item in devising means for preventing disease

THE OUTLOOK FOR THE SHEEP INTEREST

Abstract of Remarks of Prof Geo. E. Morrow

No occupation directed by human foresight is, nor can be, perfect in its details. The breeding and handling of sheep furnishes no exception to this rule, for it admits of no exceptions You have all made mistakes, and have suffered more or less as the result of such mistakes The part of wisdom is to recall these mistakes occasionally, and apply their lessons to the future

Looking back we see the bad results of speculation; when business was not on a legitimate basis, when sober men overstepped the bounds of prudence and bad men resorted to fraud and deception, leading to loss, and, in many instances a distaste, which yet remains A mistake of a different character was that too many breeders made a special object of one thing, losing sight of collateral, and often equally important points One bred for fineness of fleece, another for weight of fleece, both losing sight of the fact that only by combining these, with even further merits, can the highest and best achievements be attained Some have bred for small carcasses, with a heavy percentage of wool, thus leaving out of the consideration the important item of meat.

The day of high prices for wool has gone by. The figures reached during the war, wil probably never be secured during the lifetime of any breeder of to-day. This, so far from being a misfortune, is really an advantage, insuring, as it will, improvement in final results, by securing attention to details. A fair profit can be made in growing good wool at present rates, on valuable lands, while the pastoral regions of the newer states and territories invite to better fortune those who choose to make wool growing a specialty.

A too common mistake has been in supposing that one breed of sheep combined all the desirable characteristics, and the admirers of such favorites decrying all others. We must be more charitable in future, recognizing that there is room enough and a place for all in the world's economy

There is much to encourage breeders in the present outlook People will always have to wear clothes, and it is doubtful if anything will be found equal to wool in durability, comfort and health. There is no risk in predicting that no substitute will ever be found, and that the aggregate consumption of wool will yearly increase Men will continue to eat meat in face of the warnings and exhortations of vegetarians. Mutton is peculiarly the diet of civilized people. Side by side with the advance of civilization and wealth has grown the demand for better meat; and how well and fully the sheep breeders have responded, let the handsome animals in the pens at this and other fairs of the country attest Our people not only demand better sheep flesh than they did twenty-five years ago, but they eat more of it, and its still augmented popularity may be considered one of the certainties of the future. Sheep are not to be disconnected from good farming. Not that every man shall have sheep, but they must be part of the husbandry of every neighborhood Exceptions to that rule may be found, but they will be rare.

The outlook for those who handle sheep is not for large profits, but sure and fair returns We must all realize that, as a people, we have passed the time of infancy, and that smaller profits from all products are to be the rule henceforth Never in any country have the agricultural classes prospered as in ours With all the discouragements that have surrounded them at times, American farmers have less cause for complaint than most other business men. Their condition can be still further improved when sheep, like cattle, horses and hogs, are common to every agricultural neighborhood

The sheep that is to fill the demands of the future must combine the production of wool and mutton There will always be a demand for sheep that possess certain peculiarities of fleece—these will be the exceptions, but not the companions of the horse and cow Let us get out of the idea that meat and wool cannot be produced profitably in the same animal and both of high standard of excellence The breeding of such an animal is not impossible Extremes should be avoided The fifty pound carcass of the diminutive Merino, and the four-hundred-pound carcass of the pampered Cotswold, are alike undesirable for the commonly circumstanced farmer This admitted, the question comes up, whence is to come the popular sheep of the future? My answer is, from the Merino flocks of the present The Merino is to be the basis from which is to be cultivated the popular sheep of the future, because they are the more common sheep, and fit more nearly with the style of farming most generally pursued One chief way in which this is to be done has been told by your president, Mr. Garland, with whose views I concur—care in breeding and liberal feeding The average farmer will not be found exceptionally careful, and the animal that brings best returns without nursing will be the favorite with him. Compare the Merino of to-day with the best specimens of twenty-five years ago If the weight of fleece can be doubled, and made to cover all parts as fully as the bod, who will say we cannot affect and improve the shape and size of the body? This will be found easier than the changes in fleece already secured

But we need not confine ourselves to the Merino, much as its value as a mutton-producer may be increased In many localities, and for many farmers, the long or the middle-wool breeds of Great Britain will prove the best; and by very many others improvement can be most quickly and easily secured by crossing rams of some one of these breeds on the common Merino, or good Merino ewes of the country Cross-bred animals often fully equal, or even surpass their pure-bred parents, except in ability to transmit their own characteristics The average horse, or cow and pig are cross-bred, and it may well be that the average sheep of the future will be the result of such a cross as is anticipated It may, indeed, be, that the breed of sheep best adapted for America may be the result of such a cross, followed by a fixing of the characteristics thus secured. In such crossing extremes should be avoided It would be unwise to attempt to remedy lack of size in a flock of ewes by the use of the largest Cotswold or Lincoln ram to be obtained Violent extremes in crossing sometimes give fair results, but they are not to be commended.

It is not intended or desired to discourage those who value pedigree But the value of a pedigree must rest upon the average merit of the animals which bear it It is not enough to be told that the grandsire, etc , took certain prizes. Good animals must be shown as well as good pedigrees This much to the wool growers.

Breeders of fine sheep are engaged in a special calling Farmers will not prove serious competitors There never will be too many really great and successful breeders of sheep The field is wide and the possibilities inviting Heretofore certain breeders have been unnecessarily severe on breeds not of their choice, and prejudice and misunderstanding have been the results No one is advanced merely by pulling a fellow laborer back; but rather by gaining wisdom from his experience, and profiting by the information gained.

Remember, that improvement in live stock, as improvement in anything else, must come from increased interest and more information, or, if you prefer, more information leading to increased interest These two combined, and better practice always results.

After the essay, the evening closed by the following discussion, and an adjournment to Thursday evening, 20th inst., at 7 o'clock.

MERINOS FOR MUTTON

Mr. Bissell, of Vermont, said: There could now be had pure-blooded Merinos of sufficient size for good mutton—say rams weighing 150 pounds and ewes weighing 125 pounds, gross.

Mr. Gorham, of Illinois, had, of late years, modified his views and altered his manner

of breeding. His preference was now for large-sized Merinos, where all other points could be kept good Thought better condition could be secured in large-bodied Merinos; but did not think they could be bred to the size of so-called mutton sheep

Mr. Peck, of Illinois, thought size more the result of feeding than breeding.

Mr Day, of Illinois, held, that feeding and breeding must be combined to produce permanent size. Had found that the carcass was more easily affected than the fleece. Liberal feeding right along, while the animal is breeding, will increase size of the onspring.

WRINKLES.

Mr. Peck —As a rule, a flock that is bred away from wrinkles and oil, "breeds out," until it is not worth keeping. Thinks wrinkly sheep as healthy as smooth ones, and finds no trouble in selling wool from them within a cent per pound of that from smooth sheep while getting much heavier fleeces. Had noticed that many men who talked against wrinkles, were soon around buying wrinkly rams In reply to an inquiry, said, that when allowed to get thin, the wool was apt to loosen on the edge of the folds

Mr. Day stated, that plain-bodied sheep could be made to clip as heavy fleeces as wrinkled ones Had cut 20 pounds from a smooth-bodied ewe.

Mr Turnbull doubted if wrinkles were any advantage. Could get nearly or quite the same amount of wool from smooth sheep, and could shear two to one of the former

Mr. Gorham adhered to the determination not to breed wrinkles in excess In buying wool, had never paid as high for wool from such sheep, as it was more uneven

FEEDING.

Mr Gorham considered well-cured clover hay as valuable feed as clear hay, with one bushel of corn to the hundred sheep Should be cut when clover was in full bloom, and well cured

Mr. Peck usually allowed suckling ewes nothing but grass To the lambs fed, first, oats, then corn. Oats will give bone and size; corn will make fleece Preferred clover hay

Salt, at regular intervals, and plenty of good water, were conceded as essential to the highest thrift of flocks Instances were cited in which both had been dispensed with, but such policy found no advocates among the many practical breeders present.

Whereupon the meeting adjourned to the following evening.

THURSDAY EVENING, September 19, 1877.

Association met pursuant to adjournment.

Called to order by President Garland.

Address by Prof. George E. Morrow, of the Illinois Industrial College, Champaign, and an essay by F. E. Day, Esq., of Streator, LaSalle county, Illinois, which was followed by an interesting discussion on breeding and registering sheep. Also some remarks on holding a National sheep show.

Meeting adjourned at 11 o'clock p. m., to meet during the holding of the Illinois State Fair, on Wednesday evening of the week. The attendance was better, and more than the usual interest manifested, and the close was observed by a general hand shaking and many good wishes for each other, and the success of the Illinois Wool Growers' Association.

V. P. RICHMOND, Sec'y.

AMERICAN MERINO SHEEP REGISTER.

By F. E. Day, Streator, Ill

The subject I will call your attention to at this time is more directly for the American Merino sheep breeder than the wool grower; but, in an indirect way, it is for the wool grower

This subject of pedigree registry is not a new one. It has been discussed in different ways for the last few years, by many of our best Merino sheep-breeders; and there is an association which has published its first volume, entitled, "United States Merino Sheep Register" Now, gentlemen, we find that this work has been a drag, and that only a very few of the Merino sheep breeders have patronized it This work has been backed by some of our most prominent Merino sheep breeders, published by a strong association, and an enterprising committee has had the work in charge What is the reason that we do not find flocks of full-blooded American Merino sheep recorded in it from all parts of the United States? Is it because the American Merino sheep breeder does not want his sheep pedigrees recorded? or does this Register ignore the right of a great many individual sheep, and flocks of sheep, to be recorded in it? I believe the Merino sheep breeders

of this State, and of the United States, feel the need of having a record of pedigrees of the American Merino sheep compiled. We claim to be breeding pure Spanish Merino sheep (or, as we have adopted the name, American Merino), and are breeding to keep them pure. We have different cabanas, or families, of the Spanish Merino sheep, and we breed differently. Some breed those cabanas or families separately, or only one of them; while others cross without any reference to each other But are not all of us breeding full-blooded sheep, and should we not have a public record to go to, so that we can know what each other is breeding? We have our own individual record of pedigrees; why should we not have them published, so that each of us can know what is being bred? When the Spanish Merino breeders were confined to a few states, they did not see the need for such a work as we do at this present time, when the breeders are scattered from the Atlantic to the Pacific, and from Canada to the Gulf But would it not have been much better, as well as a great satisfaction to each of us, to have a record kept of all the Spanish Merino importations to this country, and had it carefully guarded to the present time? Its value could not be easily estimated But that is not all, those hot discussions that have come up in the last few years, in relation to the pedigrees of certain sheep, and flocks of sheep, would have been obviated, and the Spanish Merino sheep would have been on a stronger and sounder basis to-day; and those flocks that able men have spent their lives breeding and improving, would have been protected after such men had passed away Then, again, the breeders or improvers of common sheep, that are scattered in different States and Territories, would be protected from the trickeries and villainies of disreputable breeders and dealers They would know just where the American Merino sheep are, and their pedigrees Now, with these privileges and benefits in view, we should start at as early a date as possible, and on a purely democratic principle, with a platform that will be broad enough to admit of the registration of all the full-blooded American Merino sheep, whether of one cabana or another, whether large or small, whether scaling fifty points or one hundred; one that will not require a committee to travel a thousand miles or more to see the sheep, so as to know whether we can have them registered, or to know if they are worthy or not But give us one in which all that have full-blooded American Merino sheep will have a chance, whether we have few or many; one wherein the expenses will not be more than the sheep are worth After the evidence and certificates go to the committee, and it decides that they are full-blooded American Merinos, then let them be recorded, with their names or name of flock, name of breeder and owner, with their pedigrees I believe we can have a cheap and reliable register, and one that will not impair its value by being too liberal Breeders know that the same animals will not breed uniformly They may at one time breed a very fine animal, and at another time a very ordinary one, or, in other words, one that would scale higher and one lower I wish our friends East could see the advantage it would be to have a national register—one that was broad enough, so that all those who have pure-blooded Spanish (or American) sheep could have their pedigrees recorded, either in flocks or as individual sheep; and that those lines that were drawn so close were made broader and that narrowness and contractedness could be done away with, so that we could all feel that it was not for a few men to make money out of it, but intended as a benefit to each one that is breeding American Merino sheep in this nation. I ask your kind consideration of this subject.

ILLINOIS WOOL GROWERS' ASSOCIATION.

STATE FAIR GROUNDS,
EREEPORT, Ill., September 18, 1878.

The State Wool Growers Association met in annual session at 7:30 o'clock p. m.

President A. M. Garland in the chair.

Minutes of last annual meeting, and report of transactions of the Association during the year, were read and approved.

Payment of annual dues was called for, and met with favorable response.

Motion carried to appoint a committee to recommend a revision of the classification of premiums, to be submitted to the State Board of Agriculture.

President appointed as such committee: Messrs. Chas. F. Mills, T. L. Miller, Geo. F. Morgan, representing the long wool interest; Luke Teeple, J. H. Pickrell, Thos. Taylor, representing the middle wool interest; Daniel Kelley, Geo. E. Peck, R. M. Bell, representing the fine wool interest.

A general interchange of views upon the subject submitted to the committee was had, in which a general preference was expressed for some system governing the distribution of awards less liable to perversion than that hitherto in force.

The death of Ebenezer Ware, Esq. Vice President of the Association for the 3d district being announced, fitting tribute to the worth and ability of the deceased were announced by the President, and other members present; whereupon the following resolution was unanimously adopted:

Resolved, That in the death of Ebenezer Ware, of Waukegan, Vice President of the Illinois Wool Growers' Association for the 3d district, the association has lost an efficient officer and true friend; that he was a breeder of pure character and well worthy of emulation, and that in view of his wise counsels, courteous demeanor, and Christian virtues, it will be found difficult to fill his place, as a friend and co-laborer.

Pending discussion upon matters affecting the interests of sheep breeders, and a *resume* of what had been done since the last meeting, a resolution was adopted viz:

Resolved, That fully appreciating the valuable services rendered to wool growers, of the United States, and especially those of Illinois, by Hon. A. M. Garland, President of the National Wool Growers Association, and also President of this Association in his effort to sustain and keep in force the present protective tariff on wool, andin other matters tending to advance the interests of sheep breeders, he is entitled to the hearty thanks, and kindest consideration of this association.

Whereupon the association adjourned until Thursday evening, 7:30 o'clock.

THURSDAY, September 19, 1878.

Wool Growers Association met pursuant to adjournment.

President A. M. Garland in the chair.

After reading and approval of the minutes of previous meeting.

The special order, being the report of the committee on classification, coming up—it was, after mature deliberation, adopted as the sense of the Association.

The report is as follows:

Illinois Wool Growers' Association:

Your committee to whom was referred the consideration of a classification of premiums on sheep, to be recommended to the Illinois State Fair would suggest.

Seperate lots for the different breeds of sheep in accordance with the practice of years of the State Board of Agriculture in the classes for cattle, horses, swine and poultry, where the recognized pure breeds, except in grand sweepstakes, are not brought into competition with each other

The interest of sheep breeders in this state it is believed would be greatly advanced and the exhibitions of the State Fair be enlarged with a better quality of sheep by the same classification of premiums for different ages and sweepstakes for the following lots, viz: 1st, Cotswolds; 2nd, Leicesters and other long wools; 3rd, Southdowns; 4th, Shropshire and other downs; 5th, American Merinos; 6th, French Merinos

As the present practice of showing ewes in pens of three, makes it impossible to have the most critical examination and awards to the individual excellence of single animals in the several rings, your committee would suggest that the approved custom followed in other departments of showing single females, be recommended for the sheep department except as hereafter noted

The impossibility of securing an impartial committee to pass upon the entries in the present breeders' ring, where all the breeds of sheep are brought into competition, prompts your committee to suggest that a breeding pen of a ram and five ewes over two years of age, for the several classes, be substituted therefor

The many advantages to be gained in the show ring by testing the quality of sires and dams used by exhibitors, and skill in coupling for the best results induces your committee to suggest the offering of a premium in the several lots, for a ram and five of his get under two years of age.

The increasing interest in sheep breeding, so manifest in all sections of this State, cannot be better encouraged or more rapidly developed by the State Board of Agriculture than by securing legislation for the better protection of this important industry, and by increase of premiums in the sheep class approaching the amount offered this class by the State Board in 1875 and former years

(Signed) CHAS F. MILLS,
LUKE TEEPLE,
GEORGE E. PECK,
THOMAS TAYLOR,
ROBERT M BELL,
GEO F MORGAN,
Committee.

The President, Messrs. Mills and Bell were designated a committee to lay the expressions of the Association before the Board of Agriculture when arranging the premium list for the Fair of 1879, and to secure the incorporation thereof into the regulations and offerings of the Board.

The Association expressed itself favorable to a more rigid enforcement of the rules against stubble shearing, and recommended that no sheep be allowed to compete unless properly sheared subsequent to the first day of April.

Action was taken looking to the election of a vice president to fill the unexpired term of E. Ware.

Whereupon the Association adjourned to its regular annual meeting, unless sooner called together by the proper authority.

Essay read before the State Wool Growers' Association at its annual meeting in 1878:

WHAT ILLINOIS CAN AND OUGHT TO DO IN BREEDING SHEEP AND GROWING WOOL.

[*By V. P. Richmond, Moro, Madison County.*]

MR. PRESIDENT AND GENTLEMEN.—Usually we expect sheep breeders and wool growers to speak of the best breeds of sheep and best management of animals, quality and handling of wool, diseases of sheep, etc. It is time, however, that other topics in our business should be considered. It is urged by many farmers that sheep do not or will not pay on

all farms. I will endeavor to show that they will pay on every farm great or small, in our State, if properly cared for; and not only pay now, but continue to pay as long as our population is not so dense as to forbid the growing of grain. I made some effort to obtain the number of sheep assessed in our state the present year' and also the probable population of Illinois for a basis of calculation. Failing to get the desired figures I take those of Madison county, about an average as to numbers of sheep and a little over an average in population Our county of Madison contains about 483,840 acres of land. We have a population of 48,000, and the number of the last assessment of sheep was 7 139. One inhabitant to a little over ten acres of land, and one sheep to nearly each seven inhabitants That is less than one sheep to each family, and one sheep to a little less than sixty-eight acres of land Now we will continue the calculation and see how near we come to over-production in wool

It is estimated that every inhabitant requires 4½ pounds of manufactured wool per year, to clothe them as is now done. If more woolen clothing was worn it would be better for the people With a population of 48,000, we require 216,000 pounds of manufactured wool which will require 54,000 sheep; and they must be good sheep, too common sheep wont do it These figures show that we have about two-fifths of the number of sheep in Madison county that is required for producing wool for home consumption. This does not show that we are in much danger of overdoing the breeding of sheep and growing of wool for some years to come But we should export wool or woolen fabrics, instead of importing as we do at present, or only producing enough to satisfy our own requirements The demand for mutton is growing, both at home and abroad It is now generally agreed that the cheapest and most healthy meat is mutton We are using more each year at home, and the shipment of cattle, sheep and swine, both living and in carcass, is rapidly increasing, and Illinois is doing no small share in meeting the demand

Having shown you how many sheep we need to produce sufficient wool for home use, I will now show you what can be done in sheep raising without making the production and sale of grain any less To supply home demand, we want one sheep to every ten acres of land, where we now have one sheep to sixty-eight acres of land, or otherwise we have only about one-seventh as many sheep as are needed for wool-growing alone There is no doubt that where most sheep are carried is where the greatest grain crops, wheat especially, are grown Now, were we to double this number, we would only have one sheep to five acres and one acre will pasture five sheep. Using the sheep as gleaners and scavengers, more than that number can be carried on Madison county farms, and we can still sell more wheat each year than we do now One sheep and a half to each inhabitant would only be for our county 72,000, or one sheep to six and a half acres of land Many farmers are doing well with one sheep to two acres of land, and growing more grain for the keeping of that number This would just about keep up the needed supply of wool and allowance of mutton for home use, and if we would ship either we must grow more sheep To find the number of sheep the state would carry, you need only to multiply the number for Madison county by eighty, which would be about the average for all the counties in the state

WHERE TO RAISE SHEEP

On every farm some, more or less, according to the disposition of the owner and the location of the farm, and all the advantages and disadvantages considered, can be raised. Every farmer should not make wool-growing an entire business, but as a useful adjunct to other branches. Where an Englishman wants to raise a good crop of wheat, he sows turnips and feeds them off the ground to sheep by means of movable fences The turnips loosen the soil, and the sheep enrich it I find a heavy crop of manure from the sheep stable will grow heavy wheat and a strong straw, and manure from the horse and cow stables grows heavy weak straw, and no great improvement in the wheat Sheep manure is good for all crops, and always ready for use Sheep, too, are gleaners A stubble-field will soon be cleared of all the grain left on the ground, and the field left in better condition for the plow Then if you have a weedy lot it is only necessary to put the sheep in for a few days, and if they do not eat all the weeds they will the seeds, and so trample them that few will grow afterwards. Where fields of corn are strong, they will do more good than harm in a corn field, eating weeds, lower leaves, and an occasional ear of corn Unlike other stock in a corn field, if they get an ear of corn down they eat it, and do not waste any Sheep, in fact, are a necessity on every well regulated farm as helpers in the cultivation of the farm. But it is not necessary, nor is it best that every farmer should go largely into the sheep business There are plenty of lands in Illinois created for two purposes only, viz: to hold the world together and grow sheep No need to go west; no need to go to Tennessee for hilly and cheap lands to raise sheep on We have the best of sheep lands in Illinois, costing, perhaps, a little more on the start, but in the end being fully as cheap. The whole length of the Illinois river, the greater part of the eastern hills of the Mississippi, and the length of the smaller rivers and creeks have from one to ten miles of land, equal to the hills of Vermont or Tennessee, or the plains of the west for sheep raising Any young man can, with a small capital, lease these lands, stock them with sheep, care for them as he ought, and make more money than by any other branch of stock or grain raising True, the sales look small sometimes; but which is better, to sell $1,000 worth of wheat and clear $200, or sell $250 worth of wool and clear $250? So far as my experience goes, that is about the money made by the different branches Raising hogs sometimes shows much better figures, and sometimes a season of cholera will use up all the profits for several years before, and, perhaps, two or three in advance Sheep are not subject to such diseases—care and attention will keep them healthy, and should there be death from accident or other cause, the sheep leaves his pelt or wool to pay his board and funeral expenses.

These hills and hollows bordering nearly all our streams, are the natural home of the Merino, the smaller downs, the black faces of Scotland—which will sometime figure as our premium mutton sheep—and other smaller breeds of sheep. Also there is room on them for the Cashmere goat. And here let me say a word for the Cashmere in making

wool-growing a specialty Rain will come at all seasons; dogs will be raised as long as we have people too poor to feed and clothe their children properly, and while this is true, it is well to remember that two or more Cashmeres in a flock of sheep soon constitute themselves leaders, for they do not like a storm and will seek shelter, and not liking dogs any better, if they cannot scare them, will go home leading the sheep with them But they are troublesome to small farmers, and must be constantly watched when not in pasture, or all the fruit trees, ornamental trees and shrubbery will be liable to be destroyed

Then we have the heavy, sometimes too wet, lands for cultivation whose grasses grow strong and rich Here is the home of the long wools, the heavy downs, large French Merino and all large breeds of sheep. Truly, Illinois is the home of the sheep and the shepherd Can any one name a better? Or a country where more families are at home, and where more intelligent men can be found to improve each family? When we reach this point some will ask "What shall we do with the wool?" I have endeavored to show you that we need this wool for our home wear It is spun into yarn, woven into different cloths and no inconsiderable quantity felted At present there are two ways of working up the small amount now produced One is to supply our few badly sustained woolen factories, and the other, to sell to speculators to be shipped east, worked up into cloths and felts, and returned to us to wear out We suffer loss to the amount the speculators make, sometimes suffer two or three sales We suffer loss on freight to and from the place of manufacture All this can be avoided by manufacturing at home Some will say, we lack the water power to run our mills We do not need it We have a more reliable power at home and one, too, that in a series of years is less expensive A friend of mine, a woolen manufacturer for more than fifty years who owned mills on Queechy river—one of the most reliable streams of Vermont for water power—said to me that he would not use water power where coal was as cheap as in Madison county He considered steam safer, runs machinery steadier, and in the end cheaper Sometimes a boiler will blow up, but not oftener than dams give way The loss of life with a steam explosion is small in comparison with the destruction of villages and many of the inhabitants that we have heard of so frequently in the past few years We have in Illinois the water for steam and the coal to heat it and can grow the wool to run the machinery to make all the woolen goods the inhabitants may need for their comfort Then is it not wise to use the means we have? Our duty as farmers is to live within our productions as much as possible, and to encourage home manufacture in all cases If we seem sometimes to pay more, do we not in a general way do better?

Manufacturing for home consumption makes it best for the manufacturer to turn out his best work Manufacturing at home makes a greater population Operatives can live cheaper where their food is grown than where transported, sometimes a thousand miles We are just the people to feed them We can feed a million more people in Illinois Let us then increase our flocks, improve our farms, encourage our manufacturers, not of wool alone, but of all we need Let us feed the operatives here instead of paying freight both ways on wool, and on all the wool we have to send them. Both parties will be benefited by the change from our present way of doing business We are growing all kinds of wool, and each has, or ought to have, a pride in producing a good article A grower of long wool will show its length and lustre, tell you of the beautiful goods for ladies wear that can be woven from the wool of his sheep A grower of middle wool will tell you of the strong worsted and heavy cloths that can be woven from the downs, not forgetting the warm blankets The Merino man shows the fineness of the fleece, tells you that you must look to the Merino for fine broadcloths, fine French merinos, the nicest of flannels, and, all are right We want them all And we should each encourage the manufacturer of every article made of wool at home. Encourage the manufacture by wearing no imported goods, not even if it crosses the State line I want no better clothing than I have seen woven in our country and I may say, from the wool grown on my farm Having the wool of all grades of fineness growing within our State it remains now for us to improve the quality of each, and hold out inducements to manufacturers to come to us with their machinery and their operatives, work up, or use up, a part of our grain and meats and sell to us the original producers, their own manufactures to wear out in the State where grown

For improvement in breeding sheep, to protect themselves from various impositions, and to educate wool growers in their business, wool growers' associations are formed in most of the wool growing states How now are the associations conducted? Is it by lifting all together or is it by the work of some dozen or more? Our duty is plain if we would reap the whole benefit of association Men will be found willing to work for nothing, but it is asking too much to let them work and pay their own way If a wool grower can keep from 50 to 500 or more sheep, he can and ought, in all good faith to his brother wool growers, bear his proportion of the expenses and be thankful that there are some who will do the work for the small thanks they receive Letters from other state associations show that Illinois is not alone in this carelessness—that is the word in attending to the wants of the association Even the National Association needs better payment of membership That there is much gained from association is evident from the fact that nearly all business is governed by association Each class of farm animals has an association for mutual financial benefit to improve the breeds, and for general instruction Each should be well sustained but I am sorry to say they are not, and wool growers' associations the poorest of all Our whole system of wool growers' associations needs remodeling We want district associations subject to state associations, and state associations subject to the national associations all working, one into the other and one for all We do not want Merino wool growers, long wool wool growers, or middle-wool wool growers as separate organizations, but we want them altogether, working in union and harmony The moral of all that I have said is this. Grow a surplus of wool and mutton, in fact, more of all your farms will produce and sell the surplus Encourage all home manufactures, by giving them the preference in buying selling and consuming the products of each other's labor Encourage all associations to which you belong, if not by your presence most certainly by a little "material aid," and a word of encouragement to those who labor for your good Do all this, and the world will miss you when you are called away from your labor

ILLINOIS SWINE BREEDERS' ASSOCIATION.

PROCEEDINGS ANNUAL MEETING 1878.

STATE FAIR GROUNDS,
FREEPORT, September 17th, 1878.

The Illinois Swine Breeders' Association met in regular annual session in the Secretary's office on the fair ground.

Called to order by the President.

The reading of the minutes of the previous meeting was, on motion, dispensed with.

The President's annual address was read and ordered published in the proceedings.

The following essays were read: "The origin of the Poland China Swine," by Dr. Ezra Stetson, of Neponset; "The Berkshire Hog," by Phil. M. Springer, of Springfield; "The future outlook of Swine Breeding in Illinois," by Prof. Geo. E Morrow, Illinois Industrial University.

The following officers were elected for the ensuing year:

President—Charles F. Mills, Springfield.

Secretary—A. J. Lovejoy, Roscoe.

Treasurer—Geo. W. Hunt, Greenwood.

Executive Committee—Charles F. Mills, Springfield; Dr. Ezra Stetson, Neponset; A. J. Lovejoy, Roscoe, George Hunter, Carlinville; George W. Hunt, Greenwood.

Vice President;		1st	district—	John Wentworth, Chicago.
"	"	2d	"	H. D. Emery, Chicago.
"	"	3d	"	A. Z. Blodgett, Waukegan.
"	"	4th	"	W. W. Ellsworth, Woodstock.
"	"	5th	"	A. J. Countryman, Rochelle.
"	"	6th	"	E. W. Bryant, Princeton.
"	"	7th	"	Charles Snoad, Joliet.
"	"	8th	"	H. C. Castle, Wilmington.
"	"	9th	"	John H. Anthony, West Jersey.
"	"	10th	"	A. P. Petrie, West Windsor.
"	"	11th	"	B. F. Dorsey, Perry.
"	"	12th	"	J. W. Boston, Jacksonville.
"	"	13th	"	Wm. M. Smith, Lexington.
"	"	14th	"	A. J. Alexander, Charleston.
"	"	15th	"	E. H. Bishop, Effingham.
"	"	16th	"	J. T. Buchanan, Mulberry Grove.
"	"	17th	"	David Gore, Carlinville.
"	"	18th	"	A. M. Brown, Villa Ridge.
"	"	19th	"	E. S. Wilson, Olney.

Motion Mr. Springer carried,

That a committee of three be appointed to confer with the State Board of Agriculture and request the board to give a herd premium

to the several lots of swine for a breeding pen to consist of one boar and three sows over one year old, owned and bred by the exhibitor.

The following were appointed as said committee: P. M. Springer, Springfield; A. J. Lovejoy, of Roscoe; and W. T. Nelson, Wilmington.

The following resolution, introduced by Mr. J. H. Saunders, of Chicago, was adopted:

Resolved, That the Illinois Swine Breeders' Association most heartily approve the action of the Illinois State Board of Agriculture in holding a show of fat stock, and that breeders and feeders of swine in this and other states are earnestly solicited to contribute to the success of the exhibition by making an extensive and creditable show of fat hogs of the various breeds

The Treasurer made the following report, which was received and adopted:

Illinois Swine Breeders' Association:

In account with Geo W. Hunt, Treasurer

Cr		
By balance		
By amount received membership fee		$13 50
Dr		
To expense		
To balance in treasury	$13 50	
	$13 50	$13 50

GEO W HUNT, Treasurer.

FREEPORT, Ill, September 17, 1878.

On motion, the executive committee were authorized to prepare a programme for the next annual meeting of the association.

The breeding and management of swine and the preventatives of diseases of swine were discussed until a late hour.

The Secretary was instructed to present the minutes and papers read at this meeting to the Secretary of the State Board of Agriculture and request their publication in the annual report of the department of agriculture for 1878.

On motion, adjourned to meet Tuesday evening of the week of the next Illinois State Fair, in the Secretary's office

CHARLES F. MILLS, President. A. J. LOVEJOY, Secretary.

Address of Prof. Geo. E. Morrow, Illinois Industrial University, read before the Illinois Swine Breeders' Association, September 18, 1878:

"THE FUTURE OUTLOOK OF SWINE BREEDING"

By a study of the present and the past, we may, oftentime, form a reasonably correct estimate of what the future is to be. From what I know of the past and present of swine breeding the future of this interest seems at the least not discouraging and I think we may safely predict reasonable prosperity for those who pursue it intelligently At first sight it may seem the present does not give an encouraging outlook We have lower prices for swine sold in the open market; a lighter demand and lower prices for those designed for breeding purposes, and also wide-spread and unusually fatal disease Looking to the past, we find great fluctuations in the prosperity of this interest. At times prices have been very satisfactory, and the profits undoubtedly large; at other times prices have been very low and large numbers of swine have been sold at a loss to breeder, dealer and packer. From whence, then, do we get a favorable outlook? First from the broad, general proposition to which I grow to attach more and more importance, that no great agricultural interest can long remain a depression in any region well adapted to it Swine breeding is a great agricultural industry and will continue to be such. Despite the efforts of those who claim that the hog is unfit for human food civilized man continues to eat and often to grow fat from the eating of swines flesh. Illinois is well adapted to swine breeding This needs no argument. Its fertile soil produces in abundance the cereals, and especially that greatest of American cereals, Indian corn, than

The Russian hog, so-called, of a coarse frame, large size, white color, and a long time in coming to maturity, and whose best excellence was its bristles, was among the hogs of those days; but I have very grave doubts whether there was ever a hog imported from Russia to this country That there were hogs so-called is not disputed, but they were so nearly identical with the old English hog of our ancestors that their title to Russia is very problematical

The Irish Grazier was also a hog of this time—a large, coarse, lop-eared, white hog, which grew to an immense size if fed for two or three years. The Grazier part was more imaginary than real, but the name helped largely to disseminate the breed. This hog was a number one traveler, and never gave out on the way.

The Leicestershire and Byfield, also large, coarse, lop-eared, white hogs, were quite common at this time Neither of these breeds preserved the same name in different localities, and the same hog would have many local cognomens.

OLD STYLE BERKSHIRE.

And now comes the Berkshire, which is commonly supposed to be one of the oldest and most permanent of the English breeds Originally it was a very large hog, surpassed in size by but one or two other breeds, and was very frequently brought to the scales at half a ton net The original color was spotted, black and white, with plenty of red, or sandy hair, intermixed, and not infrequently entirely red or sandy The old Tamworth breed was a very near relative, and largely mixed with this breed The ears were very large and heavy, hanging *down* to the end of the nose The improved Berkshire, so-called, was produced by crossing them with the Essex, and then again with the black hog of Siam

As the Essex are named, let us see how they were gotten up. Originally they were called the Essex-half-black, and these were crossed with the black hog of Naples, Italy This was a small upright-eared hog, almost devoid of hair or bristles, but with an aptitude to take on fat very readily It is to this breed that we see so many reversions in the modern Essex and Berkshire—no wool and hair. This breed of hairless hogs may be suited to a warm climate, but will never find favor in the great Northwest The improved Berkshires of forty years since were of divers styles; and A B Allen, in 1842, advertised two styles of his own importation in Affleck's Almanac for that year. The fact is that the Berkshire has been *improved* many ways during my remembrance, but the Neapolitan has not been bred out

BERKSHIRE NEAPOLITAN CROSS.

That there ever was a hog imported into America from Poland I have never been able to learn No mention of such a breed is to be found in any agricultural journal, and had there been such a breed of hogs in Kentucky or Ohio, they would not have escaped the notice of such wide-awake pioneers of the press as Luther Tucker or Thomas Affleck. No such name as the Poland hog can be found between the covers of any agricultural journal The nearest approach to a Poland hog that can be found is that there was probably a Polander by the name of Asher Asher who raised some pigs and sold them to some one else, who called them *Polanders*

All the breeds I have named, with the exception of the Essex, Poland, and improved Berkshire, were very generally disseminated within the range of the Cincinnati market All were large, coarse, lop-eared hogs, and at this day would be called trotting hogs About this time (1842) the White Chinese and Black Siamese hogs where introduced, and the hog of the East India, crossed on all these various breeds, has revolutionized the pork trade of the world. At about this time began the era of railroads, and the hog was no longer driven to market A fat hog was of more value than a lean one; lard was then wanted for light as kerosene was at that time an undiscovered product

The original name given to the favorite type of hog resulting from these crosses, in the region of country to which I have alluded was the Warren County Hog

WARREN COUNTY HOG

This hog was crossed and recrossed, and a considerable degree of Chinese and Siamese blood was infused into its veins Just *how* they were bred no man has been able to tell It is sufficient to say that their fattening quality is due solely and alone to the infuson of the blood of China and Siam, and I have not been able to learn that at any time since has there been a fresh infusion of this blood The English breeds only gave size, constitution, and fecundity, while to the hog of India alone can be given credit for fattening qualities I do not propose to revive the controversy as to where, when, and by whom the Warren County Hog was originated, nor to explain how the present name of Poland-China came to be adopted. It is sufficient to say, however, that it was owing to the cupidity of a very few men who wished this hog called after their own pet names, and as a result this breed has been forever saddled with a name as outlandish as that of Asher Asher "Let the dead past bury its dead" All who have been acquainted with this breed for the past twenty years must remember the great change it has undergone for the better, and the past decade has witnessed an improvement that no one could have foretold But there is no good reason why the next ten years should not work a still more marked improvement. As this breed is made up of so many and seemingly discordant elements, it is in the power of the judicious breeder to shape and color the animal so that it would seem to be an entirely new breed No one of our domestic animals is so easily moulded as the hog, and in breeding for a purpose the swine grower has at his command the qualities he deems the most desirable to perpetuate. As this breed has been in the process of formation for the past forty years, and has had the united wisdom of a vast multitude of discriminating breeders to bring it to its present state of prefection and usefulness it is folly, and worse than folly, for any one man to claim that he has brought this breed to its present standard—in fact it has no standard, except in the taste and judgment of the breeder. The great number of breeds of which it is composed may be resolved into their original elements, and one man or set of men may breed back to the coarse, rough hogs, of the original type, while others may breed to the Asiatic standard.

I venture the assertion, that this breed may, in a few years, be bred entirely white, sandy, spotted, or marked like the Siamese—black, with a white stripe in the face, and white feet Just now this last is the most fashionable color, and perhaps the best, especially if accompanied with the Asiatic head and ears (mouse-shaped), and a hollow or saddle back, or, as said of shorthorns, a little slack in the crops I am well aware that symmetry is admired even in the hog; but there is no pork-raiser but will bear me witness that pigs of the Poland China breed with this defect, if it be a defect, will lay on fat much better than a roach-backed pig, and when arrived at maturity make the very best animals, even in form

At this day we frequently hear it said that this breed has been crossed with the modern Berkshire to get its color, forgetting, or not knowing, that the Berkshire gets its color from the Siamese. Unscrupulous dealers may have resorted to this cross, but the infusion of the Neapolitan blood has no tendency to improve the disposition and the lack of hair will crop out sooner or later An unquiet hog is the meanest animal in creation In this connection let me say that I am pained to learn that an effort is being made to pedigree this breed of hogs As the sow has large litters of pigs, the manufacturer of false pedigree has every opportunity to accomplish his purpose undetected Furthermore, no sow ever had a litter, but what one was better than the other, with the same care and keeping There is no intelligent breeder of shorthorns, longhorns, or any other breed of cattle, that would dare to purchase, unseen, any animal from its pedigree In this world "our eyes are our chaps," and hog breeders are not supposed to be any more scrupulous than cattle breeders The old proverb says, "never buy a pig in a poke" Take warning of the fate of pedigree when good animals are only selling at the market price of beef and their former possessors "gone where the woodbine twineth." Died of "too much pedigree" should be written for their epitaph Furthermore, Vauban a celebrated French naturalist, has made the computation that the product of a single sow might number six million four hundred and odd thousand in the short space of eleven years, and those feeling so disposed may carry the computation a few years further and see where it would end; provided always, there could be found room for the figures Of a verity pedigree is good, but individual excellence should always be kept in mind. The best is the cheapest, especially in our breeding animals.

Nothing in the pig line is so disgusting to me as this cant about thoroughbred With the exception of the wild boar and the hog of the East Indies there are no such breeds. All our modern breeds are only crosses, and all depend upon the *Sus Indicus* for early maturity and the disposition to lay on fat It is high time all swine-growers were educated to this fact, and no longer humbugged by the thousand and one different breeds and the unscrupulous methods of disposing of them that have often been resorted to There is no one breed of hogs at this day but has been revamped during my recollection A pig show teaches lessons that should be taken with many grains of allowance - they only show what may be accomplished under the most favorable circumstances of care of keeping Better go to our great marts where hogs are congregated by the tens of thousands, but where pigs of all degree, with all kinds of keep, may be seen The hog that the farmer and feeder wants is the one that will convert his surplus corn into meat, and make the most pounds for the bushel of corn consumed

So far as I am capable of judging (and my education in this line has cost much money), I think the Poland-China hog possesses all the constituents of hardiness, with powers of assimilation second to no breed They may be bred to any size desired, may be fattened for the market at any age, and are as prolific as any of our modern breeds. They are the only breed known to me that will eat and be thankful, and if not fed will not squeal about it

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Address of Phil. M. Springer, Springfield, Secretary American Berkshire Association, read before the Illinois Swine Breeders' Association, September 18th, 1878:

THE BERKSHIRE HOG.

The subject of this paper is, "The Berkshire Hog," an animal which has been bred with a view to improvement for a far greater length of time than any other known breed of swine, and which is to day acknowledged by all to be the most popular animal of its kind in the world Each class of domestic animals is kept for a specific purpose Horses for motive power; cattle for beef and dairy products; sheep for wool and mutton; hogs for lard, ham and bacon; and the lesser animals each for the profit it may be made to yield in dollars and cents, or the contribution it may bring to the general store of pleasure, making homes more attractive, or affording recreation from the severe toils of life The more perfectly each class of animals can be made to subserve the purpose, for which it is kept the more profitable and popular does it become Herein we find an explanation for the high esteem in which the Berkshire hog is held in almost every part of the civilized world

The improved Berkshires of the present day are a well-defined breed, possessing, in an eminent degree, definite and valuable qualities, and may be described as follows: Body-color, black, with smooth pliable plum-colored skin; hair rather fine, soft and thick; feet and tip of tail white, with dash of white in face, and not unfrequently the nose white, as also some white on jowl; forehead and face broad, the latter dished; with eyes

rather large and very clear; and snout short; ears of medium size, thin and very soft, and carried rather upright; neck short, broad on top, with jowl large and full; shoulder broad on top and deep through the chest; back broad; sides deep and nearly straight on bottom lines; hams large, reaching well forward on back and well down on hock, well rounded and deep through, causing the legs to stand well apart; these, as well as the fore-legs, short and strong, and standing well on the toes; tail tapering and rather fine, and set well up In general form, a modern, well-bred Berkshire, in good condition, is symmetrical throughout, attractive in appearance, and recognized at once as an animal of more than ordinary worth His average weight at six months of age, is 160 pounds; at nine months, 236 pounds; at twelve months, 322 pounds; at eighteen months, 418 pounds, at twenty-four months, 495 pounds

The improved Berkshire is further characterized by the superior quality and proportionate quanity of its flesh which is tender and juicy the hams and shoulders being nicely marbled with fat and lean meat while the sides are also noted for their excellence in these respects making them especially desirable for curing as bacon A large, coarse, fat ham, is not the kind usually sought after, when people have once tried the finer-grained, rich and well marbled hams produced from the Berkshire hog Neither is the clear fat side of bacon any longer prised by those who have learned to know the superiority of the Berkshire side, when cured as bacon and brought on the table It may be truly said that in no other animal is there comparatively so little waste as in a well fattened Berkshire From the fattening yard until he has passed through the slaughter house his shrinkage and offal are less than that of any other breed, and after the product has gone through the curing process and reached the consumer, there is but a small percentage of that waste which usually occurs in the product from other hogs; as for example, loss arising from excess of bone, disproportion of fat and lean, or coarseness and ill-flavor of the meat, rendering it unpalatable, and therefore not wholly eaten In hardiness and endurance the Berkshire may safely be said to excel every other breed of swine; simply because he possesses much higher vital powers This is no unwarranted assertion, but has been repeatedly affirmed by the best informed authorities in such matters. The National Convention of Swine Breeders, at Indianapolis in 1872, gave utterance to a similar declaration But we have later and more positive evidence than this

In 1877 the Secretary of the State Board of Agriculture issued a circular to swine breeders, requesting information on the subject on the prevailing diseases among hogs. A careful analysis of the replies received shows, that out of 100 lots of each kind attacked, there died of the mixed breeds, forty per cent, of the Poland Chinas 28 per cent, and of the Berkshires only 23 per cent

Berkshire swine are noted also for their docility and prolificacy: the sows usually producing large litters, and proving themselves gentle mothers and good sucklers The pigs come strong and healthy and are soon able to care for themselves The Berkshire also breeds more true to type than any other, hence the pigs are generally very uniform in size and appearance, and grow rapidly and evenly to maturity, and can be made ready for market at an early age This last is no small advantage in their favor The successful work of the world in general is conducted on the principal that, in whatever persuit we engage, or whatever we undertake to do, we make the most of our opportunities and the material we have in hand Successful hog raising and pork making find no exemption here, where, as in most other operations, quick returns are requisite No wonder then that in this age when "time is money," and men "travel by express, write by telegraph and print by steam," that a food-producing animal so profitable as the improved Berkshire should have become such a universal favorite

For the purpose of improving the common swine of the country, no other hog can be used to better advantage or with greater certainty of good results, than the Berkshire having descended from so long a line of pure-bred ancestors, he possesses, in an unrivaled degree, the power to stamp upon his progeny, his own excellences of form and feeding capacity, as well as vigor of constitution and ability to resist the encroachments of disease Hence he is in almost constant use for the improvement of common hogs and has contributed largely toward the "make up" of some of the more recently introduced breeds of swine The truth is, the best blood that courses in the veins of most other hogs is Berkshire blood. As a profitable grazing hog, the Berkshire is unexcelled; such is the common testimony of all who have given him a fair trial in this respect. He will thrive and grow fat on a good pasture during the summer months, with little or no grain when other hogs would have to be liberally and regularly fed to keep them in creditable condition As distinguished as short horns are among the various breeds of cattle, so have the Berkshires become among swine The high reputation to which upon their own merits, these have attained is notably shown by the care with which many breeders have in consequence been led to preserve the pedigrees of their stock, while it is doubtless true that the great value of the breed, has of itself been the prime cause of special care in the respect mentioned it is nevertheless also true that systematic and intelligent breeding with pedigree in mind, has aided very materially in improving and giving stability of character to the Berkshire hog of modern times There is no question but that American fine stock breeders, are far in advance of their English cousins in the matter of pedigree breeding The foremost men in the business in England, have already observed this, and some have taken occasion to cite the example of Americans in this advance move as worthy of emulation

It is well known that numerous representatives of the best strains of English Berkshires have been brought to this country Owing to change of climate as well as to difference in handling and feeding the descendants of these imported animals are in a few generations somewhat changed in character from that of their English-bred ancestors. The variation however is only such as makes them all the better suited for breeding back to the parent stock Since the establishment of a public record of Berkshire swine English breeders have found it practicable to secure from America animals well calculated to keep their own herds up to the requirements of the day without having to encounter the evil results of too close relationship in breeding The shipment of pure-bred Berkshires to Europe is a reaction worthy of note foreshadowing as it certainly does a bright future to our breeders; for we now find the most intelligent breeders on both sides of the Atlantic

mutually interested in the perpetuity of this matchless breed of swine which for more than a century past has been known in England and for nearly half century has engaged attention in this country. To England must always be given the honor of having been the original home of Berkshires; but America with its great natural advantages in soil and climate may soon become the most noted portion of the world for the production of Berkshires of the highest type of excellence While we are pleased to see the Berkshire so universally disseminated and highly esteemed we may also rejoice in the encouragement given to the culture of other breeds of swine Some of these have special characteristics which render them well adapted to special uses or to the particular necessities of certain localities In nearly every case however the admirers of these newer breeds measure and weigh the excellence of their favorites by the Berkshire pattern of perfection; another evidence this of the acknowledged superiority of the improved Berkshires to all others for general purposes the world over, and that its name will long retain a place of honor in the list of our domestic animals

One breed may rise, another fall,
The Berkshire hog survives them all.

REPORT OF COMMITTEE ON CROP STATISTIC

To the State Board of Agriculture:

Your committee on Crop Statistics beg leave to report that there have been issued reports as follows: for the months of May, June, July and August 3,000 copies of each, and the report for December is now nearly ready for distribution.

These reports have been sought for from a wide section of country by Business Houses, Boards of Trade, etc., and the increased edition has been none too large to meet the demand.

The expense of these reports chargeable to the appropriation by the Legislature, to date is as follows:

For December 1877 issue	$203 90
" the May 1878 issue	109 60
" " June 1878 issue	94 30
" " July 1878 issue	75 10
" " August 1878 issue	109 15
Blanks for returns	55 00
Postage	104 20
Cost of Drainage Circular No. 43	101 25
" " Collecting Drainage Statistics	20 00
Total	$872 50

Leaving a balance of the State appropriation for this purpose for the years 1877 and 1878, the sum of $267 31 available for the December issue now in course of preparation, and for other reports to July 1, 1879.

The crop correspondents reporting: number about the same as last year, with few changes, embracing every county in the State, and show increased care in their observations and preparation of reports.

The meteorological reports embrace observations from about thirty counties in the State, and a summary for each month has been prepared for publication with the crop reports.

As this work has been gratuitously done by these reporters we would recommend the passage of the following resolution:

Resolved, That the thanks of the State Board of Agriculture are due, and are hereby tendered to the crop and meteorological reporters for their valuable services rendered the State during the past year

In accordance with the act of the General Assembly to secure agricultural and other statistics, approved May 25, 1877, blanks were prepared and sent out as provided. Tables of the assessor's returns have been prepared for publication with the transactions of the State Board of Agriculture. Although these returns are not so full or complete as desirable, they will be found very valuable and enable the board to profit by the results in making more complete arrangements for the collection of statistics, which must eventually become of incalculable value to every citizen of the State.

In view of the great value of these crop and statistical reports, your committee would urge that all proper efforts be made to secure the continuance of appropriations adequate to the work by the legislature now in session.

D. B. GILLHAM,
S. D. FISHER,
H. D. EMERY.
Committee.

CROP PROSPECTS.

[Consolidation of reports returned to the Department of Agriculture May 1, 1878.]

SEASON

The season is the earliest recorded for many years, and the weather has been favorable for seeding and the rapid growth of vegetation. The extreme high temperature since the first of the year is remarkable, and is reported as without a parallel by authorities. The correspondent at Marengo, McHenry county, says: "The mean temperature of the past winter is 31° 8, or 11° 0' above the usual mean of the warmest winter before recorded here (1862-3). The precipitation has been 5.56 inches, or 0.65 inches more than usual. No sleighing; this has been the case but twice before in 17 years." The absence of snow, ice or frozen earth to counteract the influence of the sun, the heat has been more than usually felt on vegetation and also on the insect world, both of which are from three to four weeks in advance of their season. With the exception of the cold weather the last of November and during the month of December, the temperature has not been low enough to keep the ground frozen. The grass has been green and growing nearly all the winter, affording considerable pasturage. The heavy and continued rains from April 21st to 29th did much damage to the growing wheat in many sections of the State, and delayed corn planting nearly ten days. The damage to fruit by the severe hail storm on the 21st of April was extensive, and will be noted under the head of Fruit Prospects. For detailed information as to the weather, attention is invited to the Meteorological Reports for the months of January, February, March and April, published elsewhere in this circular.

FARMING PROSPECTS.

The reports from all portions of the State, with a few exceptions, are very encouraging, and express confidence in the improved condition of times and the flattering prospects for abundant crops. Small grains were seeded early, and the ground was in excellent condition for sowing and planting, much to the surprise of many who adhere to the idea that ground can not be mellow and friable in the spring unless it has the action of hard freezing weather during the preceding winter. The early spring has been improved, and farm work has advanced with the season. A great part of the corn ground was plowed and much of it planted before the usual time for commencing. In southern Illinois a good stand of corn, where up, is generally reported. Spring wheat, oats, flax, and other crops, are well advanced in growth, and give promise of a full average yield. The depression of business the last few years, and the abundant crops throughout the west, and the prevailing low prices for farm produce, has necessitated the reduction of expenses, and prompted our farmers to purchase less and to emulate a more thorough and profitable system of cultivation. The cheap lands west of the Mississippi river can successfully compete with Illinois in the production of grain and meat, as the difference in transportation to the sea board is but nominal, and has frequently been as low from Kansas City to New York as from Springfield. The condensation before shipment of crops is and should attract general attention from our farmers, who will find it more profitable to ship well fed stock, dairy products, wool, etc., than the grain necessary to produce these compressed products of the farm.

FARM LABOR.

The supply of farm hands exceeds the demand, and can be rated as only moderately efficient, but an improvement over late years. A great many of our former tenant farmers have been compelled, owing to the times, to hire out as laborers by the month, and as a rule make desirable employees. In a measure they replace the reliable, steady and enterprising young farm hands who remain in such positions only for a time, and as opportunity presents itself move farther west, and open up farms for themselves. Farmers are becoming more convinced each year that it is to their financial interest to till less land and cultivate better. This course enables them, in a great measure, to do their own work, and save yearly in hire a sum that will enable them to materially improve their farms, and purchase the best live stock. Help is usually employed by the month for the

season, which covers the time of spring seeding and planting, and continues until the close of haying and harvesting. The wages per month, with board, range from $15 to $20, according to quality of the service; without board, from $20 to $28; 75 cents to $1 per day, with board; $1 to $1.25 per day without board.

WINTER WHEAT.

The condition of the growing crop up to the 1st of April, has probably never been better throughout the winter wheat region of the State, and the largely increased acreage over last season, up to that date gave promise of an abundant yield. The profit attending wheat culture the last few years, has encouraged farmers to build high hopes on the results of the growing crop, and the discouraging reports from some sections of the State since the effects of drouth, rust, etc , have become apparent, may be somewhat overrated. The winter wheat (May 1) is generally headed out, and, as will be seen by the table published elsewhere, is in better than an average condition, and promises an early harvest and a good yield In many localities the rank growth causes fear of lodging The absence of injurious insects is noteworthy, and the complaints of damage by rust and other causes are confined to limited territory Four-fifths (79) of the counties in the State, representing the best winter wheat counties, report the condition at an average (100) or better, ranging from 100 to 145; fourteen counties report condition from three-fourths (75) to an average; six counties report from 40 to 70 per cent; and three counties make no report The damage resulting from continued rains since the forwarding of reports by correspondents (May 1), and the better oppertunity of judging as the harvest approaches, will doubtless reduce the present prospects for the winter wheat crop, which contingencies will be fully noted in the next report of this department.

WINTER RYE.

The luxuriant, and in some cases the rank growth of this reliable crop, is noted by correspondents, who report an increased acreage, and generally express the belief that the present crop, will not be an exception to the uniform good yield of winter rye realized in previous years. Eighty-five out of the ninety-five counties in the State reporting upon this crop, give the condition at an average or better, ranging from 100 to 125, and in only one county (Gallatin) can the crop be considered a failure The condition in the remaining nine counties ranging as follows. seven 95 per cent , one 90 per cent., and one as low as 80 per cent. of an average,

WINTER BARLEY

The cultivation of winter barley has not been attended with the most profitable results, and but little attention is paid to this crop The condition of the growing crop in the fifteen counties reporting thereon is an average or better, ranging as follows: eleven counties 100; three counties 110; and one county 130 per cent.

MEADOWS AND PASTURES

Are in excellent condition throughout the State, and the growth of grass is much in advance of former years The open, warm winter has been favorable for continued growth, with but little intermission, since the first of January, and the reports from correspondents show that considerable stock has subsisted through the winter on pasture This, with the abundance of corn and hay produced last season, and the low prices therefor, accounts for the unusual amount of feed reported on hand this spring. With continued favorable weather, the crop of hay and the yield of pastures in 1878 will be equal to the best seasons of which we have record

FARM ANIMALS

Are generally healthy, and as a rule are not only thriving but in splendid condition. There is less complaint of disease among live stock than for years, and the codition of cattle, horses, sheep and swine, owing to the favorable winter, early pastures and abundance of cheap feed, is very superior. The disease commonly known as "hog cholera," is less prevalent than for years.

FRUIT PROSPECTS,

With few exceptions, are promising throughout the State The amount of bloom was up to a good average, and the condition of all kinds of fruit May 1st, as may be seen by the tables published elsewhere in this report, promises more than an ordinary yield The spring has been favorable, and the temperature has not been low enough to seriously damage or retard the rapid growth of orchard or small fruits The severe hail storm of the 21st did considerable damage, especially in some counties in the north part of the State, as noted hereafter The fruit bloom this spring, and the condition of fruit May 1st, is reported as follows:

APPLES.

The apple bloom this spring was unusually large, seventy-one counties reporting an average or better, ranging from 100 to 140 per cent; twenty-six counties report from 75 to 95 per cent; four counties report from 65 to 70 per cent; and one county as low as 40 per cent Condition of apples is very promising, and much better than for years Sixty-six counties report from 100 to 150 per cent ; twenty-seven counties report condition from 75 to 95 per cent.; seven counties from 50 to 70 per cent.; and one as low as 25 per cent,

PEACHES

The bloom this spring has seldom been equaled, and was unusually large throughout the State. Eighty-six counties report bloom from 100 to 150 per cent ; three counties report from 85 to 95 per cent ; one county as low as 25 per cent., and twelve counties make no report. The condition of the crop is less May 1 than the bloom indicated Fifty-six counties report condition from an average to 140 per cent ; thirty-two counties report from 75 to 95 per cent.; one county 70 per cent.; and one county as low as 25 per cent , and twelve counties make no report.

PEARS.

The bloom is much larger than for several years, although not up to a full average. Seventy-two counties report the bloom at an average or better, ranging from 100 to 160; twenty-two report bloom from 75 to 95 per cent ; one 60, and one as low as 50 per cent , and six counties make no report. The heavy bloom gave encouragement for a larger crop than the present condition indicates Out of seventy-two counties which reported the bloom at an average or better, only forty-five counties report the condition from 100 to 150; forty-two counties report condition from 75 per cent up to 95; eight from 50 to 75 per cent , one county as low 45, and six counties make no report on condition

PLUMS

The plum bloom was abundant, and has seldom been equaled over the entire State, from which a very full report has been received Ninety-two out of one hundred and one counties reporting bloom, rate the bloom this spring at an average or better, ranging from 100 to 130; 6 counties 5 per cent less than an average, one 10 per cent less than an average, and two 15 per cent less than an average The condition of the plum crop May 1, reduces the promise largely from what was expected at time of bloom Fifty-seven counties report condition at an average or better (100 to 125); twelve counties 5 per cent below an average, twelve counties 10 per cent. below;five 15 per cent below; four 20 per cent below; three 25 per cent below, and only seven less than 25 per cent The reports generally refer to the wild varieties.

CHERRIES

The cherry bloom was large throughout the State Eighty nine counties report an average or better (100 to 125); five counties 5 per cent below; five counties 10 per cent below, and two counties as low as 15 per cent below an average Nearly one half the counties in the State report the condition an average or better (100 to 115); forty-three counties report condition from 75 to 100 per cent ; twelve counties report from 50 to 70 per cent of an average, and one county makes no report

The bloom at this date cannot be predicted except in the southern counties and correspondents have estimated, from the general appearance of the vines The fruit buds look very promising, and the bloom is rated as follows. Ninety one counties an average or better (100 to 125); six counties 5 below an average, two 15 per cent below an average, and three make no report The condition is reported as follows: seventy-eight an average or better; eleven counties 5 per cent. below an average; three counties 10 per cent below; four 15 per cent. below; two 20 per cent below; and one, 30 per cent. below.

STRAWBERRIES

There is quite a full report, and a large amount of bloom is quite generally reported Out of 98 counties reporting, 95 counties report the amount of bloom at an average or better (100 to 125). Two counties report 10 per cent below an average, and one county 15 per cent below No report from four counties The condition at date of report is very flattering for an abundant yield Eighty-nine counties report an average or better (100 to 125); five counties 5 below an average, and four make no report

RASPBERRIES

The bloom was abundant over the State, and is much above an average in nearly all the counties reporting Eighty-six counties report an average or better (100 to 120); four counties 5 below an average; three counties 10 below; one county 15 per cent below, and two 20 per cent below, and six made no report Condition is very promising, and is reported an average or better (100 to 120) in 79 counties; seven counties 5 per cent below an average; five counties 10 per cent. below; three counties fifteen per cent. below, and two counties 25 per cent. below, and no returns from six counties.

BLACKBERRIES

Ninety-nine counties report bloom, 46 of which report an average amount, and 49 more than an average, ranging from 105 to 150 per cent , and four counties 5 to 20 per cent below, with no report from three counties The condition is an average in 44 counties; above an average in 43 counties, ranging from 105 to 150; one county 5 per cent below; four counties 10 per cent. below; three counties 15 per cent below; two counties 20 per cent. below, with no report from five counties.

GOOSEBERRIES

The bloom was very full over the State, and in a majority of counties an average or better. Sixty-one counties are noted an average; nine counties, above an average (105 to

115); thirty counties from 75 to 100 per cent; one 60, and one 70 per cent. of an average. The condition is very promising Forty counties report an average; eleven counties, more than an average; forty-six counties, the condition ranges from 75 to 100, and the remaining five counties are from 50 to 70 per cent. of an average

CURRANTS.

The bloom is reported from ninety-eight counties, and is very promising. In fifty-five counties, the bloom is an average; eleven counties the bloom is above an average; twenty counties, 5 below an average; eight counties 10 per cent below; two 20 per cent ; two 25 per cent . and one as low as 60 per cent , and no report from four counties. The condition is favorable for a fair crop Fifty-two counties report an average; ten counties, above an average (105 to 120); seventeen counties, 5 per cent below; twelve, 10 per cent below; two, 15 per cent below; two, 20 per cent below; two, 25 per cent below, and one, 60 per cent. below an average

CROP PROSPECTS.

[Consolidation of Reports returned to the Department of Agriculture, June 1, 1878]

SEASON

The month of May was remarkable on account of the frequency of the rains and the low temperature, which would compare more favorably with that of April in ordinary seasons The weather has not only seriously interfered with corn planting, but on account of the low temperature prevented germination thereby causing an unusually large amount of re-planting to be done The meteorological report, published herewith, gives interesting data concerning the weather in May, In the northern division the mean temperature the month was 57 degrees, rainfall at the several stations averaged 11 days, and the rain measured 4.34 inches The prevailing winds were from the northwest The maximum temperature has always been higher in 17 Mays Rainfall one inch more than usual, and exceeded only in 5 May s In 17 years Mean temperature of spring of 1878 48° 7 or 5° 45 higher than usual, or 0° 7 above; the warmest before in 17 years Total precipitation 9 86 inches, or 1 33 inches more than usual (Marengo) In the central division the mean temperature was 58 degrees, and the number of days on which rain fell averaged 14 The precipitation measured 5 69 inches; the prevailing winds were from the west. A detailed report of the damage in Brown county by a cyclone on the 23d, is given in the meteorological report by the observer at Mt. Sterling. A slight fall of snow on the 12th of May, is reported at Galesburg in the southern division the mean temperature was 65 degrees, and the number of days on which rain fell averaged 11, the rainfall measured 6 inches; the prevailing winds were from the south and west

CORN.

The planting season of 1878 has been very unfavorable for this crop The open winter advanced preparations for farm work, and the early spring enabled many to plant a portion of their corn in April The prospect on the first of May was good for a large acreage, and, with favorable season for planting and cultivation, the crop of 1878 would have been one of the largest ever produced in the State The growth of corn has been very slow, and is generally of a sickly yellow color on flat undrained land, indicating a severe struggle for life, the growth of the few warm days was checked by the succeeding cloudy days and cold nights The reported acreage is less than that of 1877 This decrease in acreage will be in part accounted for in the increased area of winter wheat in many of the corn counties, as well as an increase generally in the winter wheat counties of the State Planting, however, will continue to June 15th, or even later, in some counties, and will probably increase the acreage therein over the estimate made June 1st. The advantages of drained land for corn have never been more apparent than during the spring of 1878. The corn on underdrained land is reported in healthy condition; a good stand and vigorous growth making, due allowance for the cold weather. The cultivation of corn on underdrained land has not been so seriously interfered with by rains and, except for unusually heavy rains, the cultivation has usually not been delayed more than one day at a time. The condition of the growing crop is reported below that of an average in many counties, principally for want of warm growing weather, and opportunity for cultivation. With seasonable weather for corn the condition will rapidly improve and, fields, green with a luxuriant growth of weeds, will soon be cleaned and in favorable state for the most rapid growth. The near approach of harvest will somewhat interfere with the necessary culture, but with the best corn growers an extra force will be employed for harvesting and nothing will be allowed to interfere with the most thorough culture during the short season of cultivation, during which the crop is to be made or lost There is less complaint of injury by insects, rats, mice, and squirrels, than for the last three years The experience the past two years, with poor seed corn, has induced more care in its selection and preservation, and few complaints of this character are noted. The large number of failures to procure a good stand are generally attributed to the seed rotting in the cold, wet ground.

Acreage.—In comparison with 1877, the table shows an increase in twenty counties, a decrease in forty-five counties, and the same acreage in 37 counties The increase in the twenty counties amounts to 105,890 acres, which is more than counterbalanced by the decrease in forty-five counties of 368 220 acres The acreage in 1877 was 8,934,418; the acreage for 1878, as reported June 1st, is 8,672,088 acres; a decrease of 262,330 acres when compared with that of 1877.

Condition.—The June, 1877, circular of this department reports condition as follows. 3 counties above an average; 9 counties an average; 74 counties from 75 to 95 per cent of an average, and 16 counties from 50 to 70 per cent of an average prospect The June, 1878 table, published herewith, shows the condition better than an average in 8 counties; an average in 11 counties; 69 counties from 75 to 95 per cent of an average; 12 counties from 50 to 70 per cent ; one county, (Macoupin) as low as 45 per cent ; and no report from Monroe county From the above comparisons it will be seen that the general condition of corn this season is more favorable than for the corresponding month of 1877, and with seasonable weather many of the gloomy predictions will change to more hopeful anticipation

WINTER WHEAT.

The cool weather the past month has been favorable for wheat, and the great improvement in some localities in condition is largely attributed to this cause, which has prevented the too rapid maturing of the crop The advantage, however, to this crop the result of the low temperature, has not been equal to the damage sustained throughout the winter wheat section by the continued cold and unseasonable rains during the greater portion of the month. The prospects for a large yield per acre are much reduced when compared with the May circular, principally owing to the causes named above in addition to which might be mentioned the damage sustained by red rust Hessian fly, lodging the result of storms, and rank growth, uneaven stand, short, poorly filled heads, and drowning out on low flat bottoms These unfavorable conditions, however are confined to localities, but have had their influence in reducing the prospective yield of the State The yield in some counties will be unusually large, and the quality very superior The harvest promises to be earlier than usual, and it is hoped that the favorable conditions may be further improved as the season for cutting advances

Acreage The area of winter wheat for the present crop is 2,032,843 acres an increase of 303,547 acres, or 17 per cent as compared with the 1877 area of 1,729,296 acres

Condition—June 1st, 1878, 23 counties report above an average, 25 counties an average; 43 counties from 75 to 95 per cent of an average; 3 counties from 62 to 70 per cent of an average In order that the changed condition during the past month may be noted and comparison made, the condition of the crop May 1st is given as follows 79 counties an average or better; 14 counties from 75 to 95 per cent. of an average, and six counties range from 40 to 70 per cent of an average The present condition is much below that for the corresponding month of 1877, as may be seen by the following, which is taken from the June 20 circular of last year "The crop is reported from 89 counties and the condition in 54 counties is above an average, an average in 18 counties and only 13 counties (some of which grow but little) below an average condition "

SPRING WHEAT.

The reports from correspondents are very encouraging and indicate more than an average crop of spring wheat The unfavorable reports concerning this crop are confined to a limited area. The general feeling throughout the principal spring wheat counties is that of confidence in a large prospective yield The area of spring wheat is quite limited as compared with winter wheat; there being 291,912 acres of spring wheat to 2,032,843 acres of winter wheat in the State in 1878

Acreage The acreage in thirty nine counties is more than last year, amounting to 43,892 acres; only five counties show a slight decrease amounting to 438 acres, and eighteen counties report the same acreage as in 1877 The acreage in 1877 was 248,458, and the acreage in 1878 is 291 912, showing an increase of 43,454 acres in favor of the present crop

Condition In 18 counties the condition is above an average, in 20 counties an average; in 13 counties from 75 to 95 per cent of an average, and in one county, Christian, as low as 50 per cent of an average The condition reported June 20, 1877, is as follows 9 counties have a prospect of more than an average yield; 27 counties have an average prospect, and in 17 counties the crop is below an average condition

OATS.

The yield of oats will be very large the acreage exceeds that of 1877 The injury from rust and other causes is very slight and with seasonable weather there will be an abundant crop

Acreage In comparison with last year 31 counties show an increased acreage, amounting to 27,733 acres; 32 counties show less acreage, amounting to 25,895 acres; and no change is reported in 38 counties In 1877, the area of oats was 1,556,282 acres; in 1878, 1,568,120 acres an increase this season over last of 11,838 acres

Condition In 48 counties the condition is above an average; 35 counties an average; 18 counties from 75 to 95 per cent of an average, and no report from Monroe The favorable condition of the present crop is best seen by comparing with that of corresponding month for last year, which is as follows: 13 counties better than an average; 45 counties an average; and 44 counties below an average

BROOM CORN.

Acreage of this crop is much less than last year and is reported in 35 counties, while in 1877 the crop was returned from 48 counties One county shows an increased acreage; 18 counties the same acreage as last year; 11 counties the acreage ranges from 75 to 95 per cent; and 5 counties the acreage ranges below 75 per cent; as compared with 1876.

Condition - The condition in two counties is above an average: in 13 counties an average; and below 75 per cent in 6 counties. Condition of crop for corresponding month of 1877 is as follows: "Two counties have more than an average prospect, while 10 have an average; and the crop is below an average prospect in the remaining 34 counties."

MEADOWS.

The season has been very favorable for meadows, and the luxuriant growth of grass is generally reported, and few unfavorable conditions are mentioned The past open winter and the continued growth of grass tempted some to pasture late in season, and too closely for the best results in meadows. This, with the overflow on the low flat meadows, are the only causes reported as reducing the condition below an average

Acreage - Only 14 counties show an increased acreage over last year, amounting to 12,470 acres; while 39 show a decrease amounting to 86,976 acres, and the same acreage as last year in 48 counties The acreage in 1877 was 2,443,360, against 2,368,854 for 1878, a reduction as compared with last year of 74,506 acres

Condition—The condition is above average in 62 counties, an average in 26 counties, and from 85 to 95 per cent. of an average in 13 counties. The condition of meadows for June of last year is as follows: 35 above an average; 39 counties an average; and 26 counties less than an average

PASTURES

The same conditions which favored the rapid growth of meadows, and mentioned above, will apply to pastures, which have seldom if ever been in better condition The frequent rains and want of warm sunshine have given cause for the complaints of the washy condition of grass, and that stock is not doing as well as the heavy growth of pastures would seem to warrant

Acreage - A small increase over last year is reported in 24 counties, amounting to 39,856 acres, which is largely counterbalanced by a decrease of 75,815 acres in 16 counties; 61 counties have same acreage as last season The acreage of pastures in 1877 was 4,379,603 acres against 4 342,644 in 1878, a decrease this season of 36,959 acres

Condition The tables published herewith show the condition above an average in 79 counties; an average in 19 counties, and from 85 to 95 per cent of an average in 11 counties. The condition same month as last year was as follows: 52 counties above an average; 43 counties an average, and 7 counties less than an average.

WINTER RYE

This crop is reported in 89 counties, and the condition compares favorably with last season. Acreage of the present crop: 45 counties report same acreage as last year; 23 report an increase of 5 to 10 per cent , 8 counties report an increase of from 15 to 50 per cent , two counties report the acreage double that of 1877; 14 counties gives less acreage, ranging from 5 to 20 per cent , while 10 counties make no report

Condition 22 counties report the condition above an average; 42 counties an average, and 25 below an average, and no returns from 13 counties. The condition of the crop same month last year; 38 counties above an average; 43 counties an average, and 25 below an average.

SPRING BARLEY

The report indicates a decreased acreage as compared with last season. The crop is reported in 27 counties this year, against 31 counties last year One county reports larger area than last year; 15 counties the same area; and 10 counties less than in 1877.

Condition The growing crop promises a large yield per acre, and the condition is better than the crop of 1877 as reported in June The present report shows condition better than an average in 7 counties; an average in 19 counties; and below an average in two counties The condition in June, 1877, is as follows: Two counties above an average; 11 counties an average, and 9 counties less than an average

FLAX

The culture of this crop has not extended over any more territory than last season, and the acreage is reported in 31 counties, which is the same number as last year The acreage of of the present crop is as follows. Nine counties report more, 18 counties the same, and 4 less than last year. The condition is better than an average in 4 counties, an average in 21 counties, and less than an average in six counties The condition in June, 1877, was better than an average in 5 counties, an average in 12 counties, below an average in fourteen counties

COTTON

This crop is reported from 5 counties, and with one exception the counties report a decreased acreage as compared with last year The condition is reported above an average in one county, an average in three counties, and 75 per cent. of an average in one county

TOBACCO

Tobacco was reported as cultivated in 42 counties in 1877; the crop is mentioned this season in 34 counties, a decrease of 8 counties.

Acreage Two counties report a larger acreage; 18 counties the same, and 14 counties less acreage than last season.

Condition —The condition is better than an average in one county, an average in 21 counties, and less than an average in 12 counties. The condition for the corresponding month of 1877 was as follows. better than an average in 2 counties, an average in 22 counties, and less than an average in 18 counties.

CASTOR BEANS

Nine counties are mentioned in this report as growing this crop, five less than reported in 1877. The acreage is reported the same in seven counties, and less than last year in two counties. The condition of the growing crop this season in the counties reporting is better than last season, as will be seen by comparison; 1878, 8 counties report an average condition, 1 less than an average; 1877, 1 county reported condition above an average, 1 an average, and 11 counties below an average

IRISH POTATOES

The area of this crop is not as large as last year, and the condition not so favorable for a large yield as in June, 1877.

Acreage The acreage in 21 counties is more than last year; the acreage in 56 counties is the same, and less in 24 counties than last season The condition is above an average in 42 counties an average in 41 counties, and less than an average in 18 counties The condition was better for the corresponding month last year, as will be seen by the following, taken from the June, 1877, report In 43 counties the condition was above an average, an average in 46 counties, and less than an average in 13 counties

SWEET POTATOES

The breadth of this crop is larger than usual, and the condition promises more than an average yield.

Acreage --The area in 4 counties is more than last year, the same in 67 counties, and less in 19 counties

Condition —Seven counties report the condition above an average, 52 counties an average, and 31 counties less than an average which is better than last year when 5 counties were better than an average, 44 an average, and 44 less than an average

SORGHUM

This crop is reported in about the same counties as last year, with an increased acreage, and the most favorable prospects for a good crop

Acreage —In 7 counties the acreage is more than last year, the same in 43 counties, and less in 22 counties

Condition Three counties above an average; 36 counties an average, and 33 counties less than an average The condition in the corresponding month last year is as follows. 1 county better than an average, 16 counties an average, and 52 counties less than an average

WINTER BARLEY

The condition of this crop is reported in 9 counties, 8 of which report condition an average, and one county below The acreage is more than last year in 2 counties, and the same in 6 counties.

CROP PROSPECTS.

[Consolidation of Reports returned to the Department of Agriculture, July 1, 1878.]

SEASON.

The mean temperature for the month of June, 1878, was lower than usual, and the rainfall is less than the average of previous years, for the same month. The weather has been quite favorable for farming operations, and especially for harvesting, which is more advanced than in several previous years In the Northern Division, the mean temperature for the month was 67°; from June 1st to 27th, the temperature was lower than for seventeen Junes past. The rainfall at the several stations averaged 12 days, and the precipitation measured 3 41 inches, or nearly one inch less than the previous month. (May) Since 1860, there have been no drier Junes in Northern Illinois, excepting the years 1861, 1863, 1864 and 1870 The prevailing winds were from the southwest In the Central Division, the mean temperature for the month was 69°; the rainfall at the stations, averaged 13 days, and measured 3 69 inches, or two inches less than in May. The prevailing winds were northwest and southeast In the Southern Division, the mean temperature was 72°; the number of days on which rain fell, averaged eight, and the precipitation measured 2 29 inches, a little more than 3 inches less than the preceding month. For the State, averaing the reports of the several stations, the mean temperature for June was 69°; the number of days on which rain fell, 11, and the measurement 3 16 inches The greatest number of days on which rain fell was 19, at Galesburg, in the Central Division; the precipitation being 6 80 inches The least amount of rainfall is noted at Mt Vernon, in the Southern Division, and measured ¼ of an inch; showers are noted on 6 days at this point A slight hail-storm is reported on the 20th, at Como, Whiteside county.

CORN.

The condition of corn July 1st, as shown by the tables published herewith, is not so promising as on the first of June; the difference, however, is so slight, that the crop with favorable weather, and proper attention will soon be in much better condition than indicated in this report. The principle causes for complaint are, slow growth weeds and poor stand. In some localities the ground is in bad condition, being hard and lumpy and very unfavorable for the rapid growth of corn The shortened acreage of corn as compared with 1877, and its poor condition on low wet lands, will somewhat decrease the prospective yield of the crop, as compared with last season No pains should be spared by farmers, to obtain the best possible results, and realize the benefits of prices paid, when the supply is limited. On high or drained land, there is hardly an unfavorable report; the stand is good, the growth rapid and most vigorous, and the crop in the best possible state of cultivation; the rains have interfered but little with continued culture Many thousands of Illinois farmers who have the past few seasons, seen the advantage of thorough tile drainage, and the uniform good returns on such lands in dry and wet seasons, will need no encouragement to follow the example, and realize the benefits received by enterprising farmers, who have made such profitable investments, by drainage Drainage on much of our rich, flat prairie lands is a necessity, and may be considered the key to the highest degree of success in producing uniformly paying crops The condition of the crop July 1st, is reported as follows, the figures in brackets are from the previous report, June 1 seven counties above an average, (8); twelve counties, an average (11) sixty-six counties from 75 to 95 per cent of an average, (69); and seventeen counties, from 50 to 70 per cent of an average condition, (12) The difference of condition in favor of the previous month is hardly worthy of mention The condition for the corresponding month, (June) of 1877, is as follows. three counties above an average; nine counties an average; seventy-four counties from 75 to 95 per cent of an average; and sixteen counties from 50 to 70 per cent of an average prospect The condition is a shade more promising this season than last for the growing crop, which may partially make up in yield for the decreased acreage of 1878

BROOM CORN

The condition of this crop is reported in fifty-seven counties The area devoted to the culture of broom corn is much larger than reported last month The condition of the growing crop has materially improved since last return, (June) as will be seen by the following, the figures in brackets refer to the counties having same per cent of condition for the corresponding month of 1877 Three (2) counties above an average; twenty (10) counties an average; twenty-eight (24) counties from 75 to 95 per cent of an average and six (6) below 75 per cent of an average condition For the previous month (June 1878,) two counties were reported above an average; thirteen counties an average, and six counties below 75 per cent of an average condition

SORGHUM

The condition of this crop, as shown in the tables, does not indicate improvement during the past month, the prospect, however, is much better than for the corresponding month of 1877 The figures for previous year are in brackets Seven (1) counties report conditions above an average; twenty-one (16) an average, and fifty (58) below an average. The condition June 1st, was as follows. Three counties, above an average. thirty-six counties, an average and thirty-three counties less than an average

WINTER WHEAT

The great improvement in the condition of this crop during the past month, has assured a large yield, the quality is generally reported very superior. The average yield per acre, judging from the present reports, is less than last year, but the increased acreage, will more than make up for the difference in yield, and the wheat crop, (including spring wheat) will be one of the largest produced in the State The weather since harvesting commenced, has been favorable, and the crop, so far as cut, is saved in excellent condition Threshing and marketing of the crop will not be delayed as long as usual, and the bulk of winter wheat will soon find its way into market, to the pecuniary advantage of the producer The yield, price, etc. will be given by counties, in the next report of this Department, before which, the more northern counties will have completed their harvest, and all sections will be in possession of the necessary data to give complete information concerning the extent and quality of the new crop The condition of the crop, July 1st, is reported as follows, report for July, 1877, in brackets. Forty-three (58) above an average; twenty-nine (20) an average; sixteen (6) from 75 to 95 per cent of an average, and nine counties from 50 to 70 per cent of an average

SPRING WHEAT

The condition of spring wheat is not as promising as on June 1st, and a number of causes are assigned therefor—such as rust, chinch-bugs lodging and unfavorable weather, these unfavorable conditions, however, are not general. The increased acreage over the previous year will, notwithstanding the present unfavorable conditions insure a large yield of spring wheat. With continued favorable weather until after harvest, the condition of the crop will be much improved, and it is believed that the next report will make a much better showing for this crop The condition is reported as follows, the figures enclosed refer to 1877 condition for the corresponding month· Nine (9) counties report condition above an average; twelve (27) counties an average; thirty-two (17) counties range from 75 to 95 per cent . and four counties, from 50 to 70 per cent. of an average condition.

SPRING BARLEY.

The condition of this crop is reported in thirty-three counties—two more than last year, and six more than in the previous report. The condition is more promising for a larger yield than lastyear, as will be seen by the following—condition for June, 1877, enclosed in brackets: Four (2) counties report condition above an average; nineteen (11) counties an average, and ten (9) counties less than an average. The crop is no doubt cultivated in many other counties, but to such a limited extent as not to be considered worthy of mention, by correspondents

OATS.

The condition of this crop promises a very large yield througout the State, and with favorable weather for harvesting, the 1878 crop will correspond most favorably in quantity and quality, with the largest crops (75,000,000 bushels in 1875) ever produced in the State. The acreage of the present crop has been exceeded only three seasons (1874, 1875, 1876.) and from present indications, the yield will be one of the largest on record The condition is far better than for the corresponding month of 1877, as will be seen by an analysis of the returns—the figures enclosed are for June, the previous year: The condition in fifty-four (13) counties, is above an average; twenty-nine (45) an average, and nineteen (44) below an average, ranging from 75 to 95 per cent of an average condition

FLAX

The condition of Flax is much better than reported last month, and promises a larger yield than the previous year, as will be seen by comparison with returns for the month of June, 1877, which are enclosed in brackets· The condition as shown in this report is very favorable to all interested in this crop; Seven (5) counties report the condition above an average; eighteen (12) an average, and seven (14) counties below an average.

COTTON

The condition of cotton in the few counties reporting its culture, is favorable for an average crop in five counties, and three fourths of an average in one county (Jefferson) The counties reporting are as follows. Alexander, Hamilton, Jefferson, Massac, Saline and Williamson In June, 1877, the condition was 100 in Franklin and 75 in Williamson, the only counties reporting the crop

TOBACCO

The crop is now reported in 41 counties, an increase over the June 1st report of seven counties The condition of the crop has slightly improved during the past month, but does not materially differ from the condition for the corresponding month of 1877, the figures for which are enclosed in brackets and follow the returns of the present month. Two (2) counties report the condition above an average; twenty-two (22) counties, an average, fifteen (18) counties range from 75 to 95 per cent , and two counties less than 70 per cent of an average

IRISH POTATOES

The season has not been favorable for thorough culture and the most rapid growth of this crop, which is not in as promising condition as at date of las report, June 1st This is quite an important crop in this State, and is meeting with increased favor. Many who have extensively cultivated the crop and not only realized profitable returns, on suitable drained land, report the crop about as certain of making a remunerative return as any other field crop The figures enclosed refer to the corresponding month of last year, (June) The condition July 1, 1878, in thirty-eight (43) counties is above an average; twenty-nine (46) counties, an average, and thirty-two (13) counties range from 75 to 95 per cent of an average, and one county less than 70 per cent June 1, 1878 42 counties were above an average, and only 18 counties less than an average

SWEET POTATOES.

The condition of this crop is not as favorable as a month ago and not so promising for a large yield as indicated for the previous crop, and noted in the circular of this department for the corresponding month of 1877 The numerals refer to the condition for June, last year Three (3) counties report condition this season, above an average; forty-one (44) counties, an average; forty-five (44) from 75 to 95 per cent and one below 70 per cent. of an average condition

MEADOWS.

The condition of meadows over the state, while not so promising as a month ago, still gives much encouragement for a very large yield, and even more on the average, than the previous year is predicted, which yield per acre has probably never been exceeded in the state. The reduced acreage as compared with 1877, will make the aggregate yield somewhat less than the previous crop The condition last June is noted herewith, in numerals: Forty-four (35) counties in this report show the condition to be above an average; forty-three, (39) an average; fifteen (26) counties from 90 to 95 per cent of an average condition

PASTURES

The condition of pastures is more favorable than for the corresponding month of 1877, and while not so favorable as last month, (June) is very fine for the time of year, as may

be seen by the following: The numerals refer to June, 1877, report. The condition in fifty-six (52) counties is better than an average; an average in twenty-nine (43) counties and from 85 to 95 in sixteen (7) counties.

YIELD OF FRUIT.

The per cent of an average yield of the fruits named, is shown by this report to be as follows—the numerals indicate the yield for the previous year:

Cherries - Eleven (5) counties report yield above an average; fourteen (11) counties, an average; fifty-two from 75 to 95 per cent, and twenty-three below 70 per cent of an average, and ranging down as low as 15 per cent.

Strawberries -Sixteen (6) counties, the yield is reported above an average; thirty-three (24) an average; forty-six (56) counties range from 75 to 95 per cent, and five (14) counties below 70 per cent. of an average

Raspberries —Twenty-nine (9) counties above an average yield; forty-three (33) counties an average; twenty-six (47), from 75 to 95, and one (1) county below 70 per cent of a average yield

GOOSEBERRIES

Eight (6) counties report the yield above an average; twenty-nine (34) an average; fifty-one (44) counties, from 75 to 95 per cent, and nine, (14) below 70 per cent. of an average yield Currants, six (3) counties report yield above an average; thirty-one (20) counties an average; fifty-one (40) from 75 to 95, and five (5) below 70 per cent of an average yield.

ACREAGE.

The acreage of the crops named is compared with 1877, and is shown by the tables to be as follows.

Field Beans — Nine counties report an increased acreage; forty-seven counties the same acreage, and from 75 to 95 in fifteen counties, and no report from the remaining 31 counties.

Field peas.—Three counties report an increased acreage; thirty-one counties the same acreage, and six counties from 75 to 95 per cent. of former acreage, with no report from 62 counties

Timothy Meadow —Twenty-one counties an increased acreage; the same acreage in thirty-seven counties, and a reduced acreage in forty-four counties, ranging from 75 to 95 per cent. as compared with 1877

Clover Meadow.—Twenty-two counties the acreage is larger than last year; the same in fifty-one counties, and less in twenty-eight counties, ranging from 70 to 95 per cent

Prairie Meadow is reported from 67 counties, two of which show increased acreage; thirty-one the same acreage, and thirty-four less acreage, ranging from 50 to 95 per cent of the acreage of 1877

Apple Orchards. Ten counties show an increased acreage; thirty counties the same acreage, and reduced acreage is reported in the remaining twenty-one counties.

Peach Orchard —The acreage is returned from ninety-three counties, thirty-two of which show increased acreage; fifty counties the same acreage, and reduced acreage in eleven counties,

Pear Orchard —Six counties show an increased acreage; sixty-three counties the same acreage, and less acreage in twenty-four counties, no report from nine counties.

Vineyards —Twenty-five counties report an increased acreage, forty-nine counties the same acreage, a reduced acreage in twenty-three counties, and no report from five counties.

Hungarian and Millet - The acreage of these crops are returned from seventy-eight counties, fourteen of which report an increased acreage; forty-eight the same as last year, and a reduced acreage in sixteen counties

It will be observed that the number 100 is used to represent the acreage of 1877 of the crops named in this report; also, an average condition or yield; an increase of ten per cent. is marked 110, a decrease of five per cent. is recorded 95, etc.

CROP PROSPECTS.

[Consolidation of Reports returned to the Department of Agriculture August 1, 1878.]

SEASON.

July was remarkable for extreme heat and absence of rain, thunder and lightning, until late in the month, when the temperature was modified by the frequent and abundant rains The figures in brackets are given from the July, 1877, meteorological report for the convenience of comparison

In the northern division the mean temperature of July, 1878, was seventy-seven (73) degrees, four degrees higher than for same month last year The highest temperature, 102° (94°), was at Hennepin, eight degrees warmer than July, 1877. The lowest temperature, 54° (48°), at Marengo, six degrees higher than in the corresponding month of last

season. The rain-fall at the several stations averaged 8 (6) days, and the rain-fall at the different points averaged 3 11 (2.96) inches 15-100 of an inch more than in July, 1877. The heaviest rain-fall 4.15 inches, was at Lyndon, Whiteside county; the lightest rain-fall, 1 10 inches, was at Hennepin. At Marengo—July's mean temperature was 3° 1 higher than usual In 17 years, only Julys, 1868 and 1870, were warmer The week succeeding the heavy rains of the 11th and 12th was the sultriest and most trying experienced in the west since 1861 Ninety per cent of the rain during the month fell in 18 hours on the 11th and 12th." The prevailing winds were from the north-east; the relative humidity for the month at Sandwich was 89° 8.

In the central division the mean temperature was 80° (75°), five degrees higher than same month last year The highest temperature, 103° (96°), was at Aledo, Mercer county, seven degrees higher than for the corresponding month of last season The lowest temperature, 61° (52°), at Peoria The rain-fall at the several stations averaged 6 (8) days, and the rain-fall at these points averaged 2 72 (3 33) inches, 61-100 less than in July, 1877. Hancock county reports the greatest number of rainy days—8; Mercer and Peoria the least —5 days each The heaviest rain fall for the month 4 70 inches, was at Mt Sterling; the lightest rain-fall, 1 45 inches, at Aledo The prevailing winds were from the south-west

In the southern division the mean temperature was 82° (74°), eight degrees higher than for same month last year The highest temperature, 104° (97°), was at Hillsboro, seven degrees higher than same month last year; the lowest temperature, 60° (50°), at Louisville, ten degrees higher than in the corresponding month of last year. The rain-fall at the several stations averaged 6 (5, days, and the rain-fall at the different points averaged 2.93 (1 53) inches, 1 40 100 more than in July, 1877. The greatest number of rainy days during the month are reported at Cairo, Carlinville and Golconda—10 each, Louisville and St Marie the least—3 each The heaviest rain-fall for the month, 6 50 inches, was at Louisville, Clay county; the lightest rain-fall 9 10 of an inch, at Hillsboro. The prevailing winds were from the north-east and south-west The eclipse of the sun on the 29th was reported by most of the observers

CORN.

The prospect for a fair crop has not materially improved during the past month; some sections reporting more encouraging prospects, while other portions of the State make unfavorable predictions concerning the crop The wet, cold spring necessitated much more re-planting, than usual, and late corn is the general rule, the maturing of which largely depends upon the time of the first killing frost. In the northern part of the State the rains were more frequent during the early part of July, and the intense heat which prevailed during the greater part of the month greatly promoted the growth of corn, and increased the prospects for a medium crop In the central division of the State the want of rain until late in the month of July was quite general, which, with the extreme heat, scorched and damaged, past recovery in many localities, the late planting on low, wet land, and reduced the prospect, except upon well cultivated and drained land During the most trying period of the drouth, the surprising benefits of thorough underdrainage was made most apparent, especially where the corn crop was in good state of cultivation, and the ground in loose condition, so as to admit the air freely The crop on drained land made the most rapid and vigorous growth during the hot dry weather, while corn on adjacent pieces of flat undrained land was fired and seriously injured In speaking of the benefits of underdrainage in lessening the injurious effects of drouth, we cannot do better than to call attention to a paragraph from "important results from drainage," by Mr Warring, and while applying equally to all other crops, is mentioned in connection with corn, which has suffered more this season from drouth than other crops

It greatly lessens the evil effects of drouth. During the hottest weather there is a great amount of water in the atmosphere, which has been evaporated from the earth by heat, and which is held by heat in the form of vapor When this vapor comes in contact with bodies sufficiently cooler than itself, they take away its heat, and the vapor contracts to the liquid form (condences) and is at once deposited as dew on the surface of the cooler substance. At night, after a hot summer day, the earth is much cooler than the air, consequently, as it absorbs heat from the atmosphere and from the watery vapor contained in the air, dew is deposited In like manner a knife-blade condenses dew from the breath by depriving the moisture in the breath of its heat, and thus causing it to assume the liquid form So, when the water is removed from the soil, the spaces between its particles (which, before drainage, had been filled with water) are occupied by air, and, to a greater or less extent - owing to the motion of the air above the surface caused by winds, and to the effect of changes of temperature below the surface this air is constantly changing, and that which enters from above charged with vapor gives up its heat and therefore the moisture, both of which are absorbed by the lower and cooler soil

The early season made an early grain, and hay harvest, which demanded the attention of all available force to the serious disadvantage of corn then at a critical period and much in need of cultivation At the close of harvest corn was quite weedy and in bad condition, and afterwards generously responded to the thorough culture it received during the month of July The rains since July 21st have been abundant and quite general over the State, with very little damage by winds The reports concerning the prospective improvement in the condition of the corn crop, with a late and favorable season, are cheerful, and more hopeful anticipations are entertained for a medium crop of corn than at any previous time during the season The condition of corn Aug 1st, 1878, is as follows: The condition for the corresponding month (August, 1877) may be found in parentheses in connection therewith Four (3) counties above an average; sixty-six (48) counties from 75 to 95 per cent of an average; eighteen (27) counties from 50 to 75 per cent of an average

WINTER WHEAT

The results of threshing have confirmed the unfavorable predictions made at and previous to the time of harvest concerning the yield and quality of the winter wheat crop of 1878 The average yield per acre is about 18 per cent less than last year. In some sections

of the winter wheat counties, the quality is reported inferior, and the grain somewhat shriveled, owing to rust and unfavorable weather The superior quality of the sample in other localities will no doubt bring the entire crop of the State up to a fair average in quality as compared with previous years The anxiety of winter wheat growers in this State, to thresh and market the crop at the earliest date, and previous to the arrival in market of the immense prospective crop of spring wheat from the north-west, has been greatly allayed since the reports concerning the serious damage sustained throughout the greater portion of the spring wheat territory has been confirmed The total winter wheat crop of this State, notwithstanding the increased acreage, will not be more than two per cent greater than last year In 1877 the winter wheat crop was 29,510,032 bushels; in 1878, 30,013,147, an increase of 503,115 bushels in favor of the present crop The acreage in 1877 of 1,736,301 was increased in 1878 to 2,032,843, or 296,542 acres The average yield per acre in 1877 was 17 bushels, against about 15 bushels in 1878 The value of the 1877 crop of 29 510 032 bushels at the time of harvest was $1 15 per bushel making $34,960,824 The present (1878) crop of 30 013,147 bushels is valued at 80 cents per bushel, making $23,874 257 The difference in valued in favor of the former (1877) crop when compared with the value of the present (1878) crop, is over eleven millions of dollars ($11 090 567) a sum which Illinois farmers cannot afford to lose A reasonable prospect for the usual advance in price will influence producers to wait and share in the prospective increased value of the crop The average price of wheat at Chicago the principal wheat market for twelve years ending December 31st, 1877, is as follows the figures in parentheses are for the corresponding months of 1877: January $1 26 ($1 28), February, $1 25½ ($1 28½), March, $1 25⅜ ($1 24); April, $1 33½ ($1 43½); May, $1 44 ($1 61); June, $1 36¾ ($1 17½); July, $1 31¼ ($1 10⅛), August $1 29¼ ($1 13½); September $1 26 ($1 12¼); October, $1 24 ($1 10); November, $1 19 ($1 08¼); December, $1 20½ ($1 08¾) In view of the discouraging reports from the great spring wheat district of the northwest, the value of the present crop in the hands of the farmers in this State should not be sacrificed until the total yield of the wheat crop of the season is more fully known

SPRING WHEAT

The early anticipations of more than an average yield of spring wheat in the northern part of the State, were dispelled before harvest by the injury sustained by chinch bugs, rust and the extreme hot weather which prevailed at the critical time when the berry was in milk The hot, dry atmosphere prematurely ripened the crops and in many instances caused the berry to be shriveled and light in weight The quality of spring wheat is not up to a good average The yield per acre is better than last season, with an increased acreage in favor of the present crop Some localities report very large yield, and that the quality was never better Such reports, however, are the exception The acreage of spring wheat is 291,912, an increase of 43,454 acres, as compared with previous years, area of 248 458 acres The average yield per acre, 13¼ bushels is some better than last year, when the total area of the State produced only 12 bushels per acre. The 1877 yield of 2,980,524 bushels, is increased in 1878 to 3,870,251 bushels, difference in favor of the present crop of 889,727 bushels The previous crop at time of harvest, was worth $3,041,258 00, or $1 02 per bushel; the present crop, at 82 cents per bushel, is valued at $3,189,203, or $147,945 more than the 1877 crop

SUMMARY.

SPRING WHEAT

Year	Acres.	Yield per acre	Bushels	Value per bush.	Total value
1877	248,458	12	2,980,524	$1.02	$3,041,258
1878	291,912	13¼	3,870,251	82	3,189,203

WINTER WHEAT

1877	1,736 301	17	29,510,032	1 15	34,960,824
1878	2,032,843	14¾	30,013,147	80	23,870,257

WHEAT CROP, 1878.

Spring,	291,912	13¼	3,870,251	82	3,189,203
Winter,	2,0 2,843	14¾	30 013,147	80	23,870,257
Total, 1878,	2,324,755		33,883,398		27,059,460
" 1877,	1,984,759		32,490,556		38,002,082

From the above it will be seen that the spring and winter wheat acreage this year of 2,324,755 acres is 339,996 more than the 1877 acreage of 1,984,759 The yield of spring and winter wheat this season is 33,883,398 bushels, and exceeds that of previous year of 32,490 556 by 1,392,842 bushels The value of the previous spring and winter wheat crop was $38,002 082 against $27,059,460 for this season, a difference of $10,942,622 in favor of the previous crop The present crop is the largest ever produced in the State, and is only approached by the previous crop and that of 1864 The value of the present wheat crop of the State has been exceeded in 1863, 1864, 1865, 1866, 1867, 1868, 1871, 1872, 1873 and 1877

OATS

The present crop with one exception, that of 1875, is the best in point of yield, ever produced in the State, and the quality is generally reported fine: In some localities the rank growth was lodged by storms which largely reduced the yield The crop was prematurely ripened by the intense heat which prevailed at the time the grain was in the milky state, which, with some rust in localities, partially accounts for the light weight of oats in some sections In several localities correspondents recommend the practice of pasturing oats moderately, which has been found of great advantage in preventing too

rank a growth of straw, and as inducing the better filling of heads and improving the quality of the grain. The yield of oats reported on under-drained land is very large, and in several reported instances the crop is more than double that of neighboring pieces of undrained land of the same character and location. The crop has suffered most seriously on low, wet, undrained land, where failure of the crop is the rule, principally owing to long continued rains which prevailed so generally over the State during the past spring and early summer In 1877 the area of oats was 1 556.282 acres, in 1878 1,568,120 acres, an increase this season over last of 11 838 acres The average yield per acre is the same as last season--39 bushels. The 1877 yield of oats 61,145 983 bushels, was increased in 1878 to 62.096,388, or nearly a million (950 405) bushels, as compared with previous crop The prevailing low prices of nearly all kinds of farm products, when compared with last year, finds no exception with oats The 1877 crop, at time of harvest, was worth 26 cents per bushel throughout the State, against 20 cents per bushel for the present crop The 1878 yield of nearly a million more bushels of oats than last year is worth nearly four millions ($3,817,757) dollars less than the previous crop, which was valued at $16,269,647 against $12,451,890 for this season The profit attending the feeding of oats in Illinois is becoming more apparent each year, and the advantages and economy of feeding less corn and more oats to some kind of stock is attested by the increased consumption of this crop, especially in the dairy regions. The present large crop of oats at the prevailing low prices will be fed in increased proportion, as compared with previous years, by the farmers of this State, many of whom are not advocates of the single grain diet of corn for all kinds of farm stock

The season, up to the time of harvest, was most favorable for the growth of meadows, which have seldom produced a large average yield of hay per acre The growth of grass in several instances is reported too rank for the best quality of hay The hay crop was generally saved in fine condition, and the quality is up to a good average Except in a few localities, the weather was very favorable for saving the crop The imperative necessity for harvesting the small grain, and the importance of "laying the corn by" in the best condition induced some to neglect their hay, which was in condition to cut earlier than usual, until it was too ripe The damage by overflow of water on bottom meadow lands early in the season was made more apparent at time of cutting hay, in the light yield and poor quality of the crop The acreage in 1877 was 2,443 360, against 2 368,-854 for 1878, a reduction as compared with last year of 74,506 acres The average yield per acre this season is 1 80 tons; the average yield last year, 1 65 tons The average yield per acre this season throughout the state is the largest on record the past 18 years The hay crop this season notwithstanding the decreased acreage as compared with 1877, is 4,255,-471 tons, the yield last season was 4 040 967, or 210,504 tons in favor of the present crop The total value of the previous crop was $21 971,368; the present crop is valued at $19,994 341 The price of hay last season ($5 43 per ton) over the present price ($4.67 per ton) makes a difference in favor of the previous crop of $1,977,027

BROOM CORN

The condition of broom corn has slightly improved the last month, and is somewhat better than for July, 1877, the condition for which appears in parentheses following the condition for the corresponding month this season: Two (2) counties report condition better than an average; twenty-three (20) counties an average; twent eight (29) from 75 to 95 per cent of an average, and six counties below 75 per cent. of an average

FLAX.

The condition of flax last season was reported from 35 counties, against 28 counties this season a decrease of seven counties The condition is not so promising as last month, or so favorable as for the corresponding month of last season, the figures for which are enclosed in parentheses: August 1, 1878, 2 (5) counties report the condition better than an average; fourteen (12) counties an average; twelve (14) counties from 75 to 95 per cent of an average

COTTON.

The condition of cotton has improved since last month's report, and is more promising than for same month last season In July, 1877, two counties reported condition an average, four counties from 75 to 95 per cent of an average and two counties less than an average August 1, 1878, two counties report condition better than an average (110; three counties an average; one county 80 per cent. of an average, and one 65 per cent. of an average

SORGHUM.

The condition has slightly improved the past month, and is rather more promising for a good crop than last season, as will be seen by comparison; the figures enclosed are for July, 1877: The condition August 1, 1878, is better than an average in one (2) county; an average in twenty-eight (25) counties; forty-three (35) counties from 75 to 95 per cent of an average; eight (20) counties less than 75 per cent of an average

HEMP.

The crop is cultivated to such a limited extent as to be hardly worthy of mention In 1877 one county reported same acreage as in 1876, and that the condition in July was up

to three-fourths of an average. In 1878 one county reports an increased average (105), and one county nearly an average (95) The condition of August 1, was better than an average (105) in one county, and an average in one county, showing an increased acreage and better prospect for the present crop

PASTURES.

The dry weather has seriously affected the condition of pastures, which are much below an average for the season, as compared with same month in former years July 20, 1877, 53 counties were above an average in condition; 37 counties an average, and 12 counties from 75 to 95 per cent of an average. August 1, 1878, 17 counties report better than an average; 36 counties an average, 47 counties from 75 to 95 per cent of an average, and two counties less than 75 per cent, of an average. The late rains have been quite general and abundant, and the condition of pastures will soon be much improved.

TOBACCO

The condition has improved but little during the past month, but is better than for the corresponding month last year. July 20, 1877, 15 counties reported the condition an average, 19 counties from 75 to 95 per cent. of an average, and 5 counties less than 75 per cent August 1, 1878, 24 counties report the condition an average, 24 counties from 75 to 95 per cent. of an average, and one less than 75 per cent.

CASTOR BEANS.

The condition of this crop is reported in only 13 counties this season, and 17 counties last season The condition is better than for the same month last season July 20, 1877, 4 counties reported condition an average, 8 counties from 75 to 95 per cent of an average, and 5 counties less than 75 per cent of an average August 1. 1878, 3 counties report condition better than an average; 4 counties an average; 6 counties from 75 to 95 per cent. of an average.

IRISH POTATOES

The condition of this crop is much less promising than one month since, and does not promise more than half as large a yield as last year, owing to the drouth which prevailed in July and other causes Some localities report that the crop is rotting badly in the ground. July 20, 1878—48 counties reported the condition above an average; 32 counties an average; 22 counties from 75 to 95 per cent of an average August 1, 1878 the condition is reported above an average only in 8 counties; 30 counties an average; 61 counties from 75 to 95 per cent of an average The abundant rains late in July will improve the prospects for Irish potatoes

SWEET POTATOES

The condition of this crop is much more promising than for the corresponding month last year, but is not looking as well as one month since July 20, 1877 3 counties reported the condition above an average; 28 counties an average; 62 counties from 75 to 95 per cent of an average. August 1, 1878 2 counties report the condition above the average; 40 counties an average; 47 counties from 75 to 95 per cent of an average; 4 counties less than 75 per cent. of an average.

BUCKWHEAT.

The acreage of buckwheat is largely increased over the previous year, which also showed a larger acreage than for 1876 In 1877 19 counties had more than an average acreage; 21 counties an average; 26 counties from 75 to 95 per cent of an average, and 10 counties less than 75 per cent. of an average acreage In 1878 25 counties report more than an average; 22 counties an average acreage, 29 counties from 75 to 95 per cent of an average, and 4 counties less than 75 per cent of an average acreage The condition is somewhat better than last year, the figures in parentheses are for 1877: August 1, 1878 the condition in four (10) counties was above an average; thirty-seven (24) counties an average; thirty-four (50) counties from 75 to 95 of an average, and one (18) county less than 75 per cent of an average.

TURNIPS AND OTHER ROOT CROPS.

The acreage of turnips and other root crops is more than an average in five (17) counties; an average in 58 (25) counties; 24 (42) counties the acreage is from 75 to 95 per cent of an average, 4 (16) counties the acreage is less than 75 per cent of an average; the figures in parentheses are for the year 1877 Condition, August 1, 1878—one county above an average; 57 counties an average in condition; 30 counties the condition is from 75 to 95 per cent of an average; two counties the condition is below 75 per cent of an average

FIELD PEAS.

This crop is not extensively grown, and is reported only in 26 counties, one of which reports the condition above an average; 18 counties an average; 6 counties from 75 to 95 per cent of an average, and one county less than 75 per cent of an average

FIELD BEENS.

The condition is reported above an average in three counties; an average in 35 counties; 26 counties report the condition from 75 to 95 per cent of an average; 5 counties the condition is below 75 per cent of an average

Apples The condition of apples August 1, 1878 is reported as follows -the figures enclosed are for July 20, 1877: Two (9) counties an average, or better; thirty-four (23) counties from 75 to 95 per cent of an average; sixty-six (67) counties less than 75 per cent of an average.

Peaches.—The condition of peaches has seldom been more promising for an abundant crop. The condition in figures July 20, 1877, follow in parentheses those of August 1, 1878; Thirty-three (2) counties report condition above an average; twenty-one (4) counties an average; twenty-seven (9) from 75 to 95 per cent. of an average, and six (49) counties less than 75 per cent. of an average in condition

Pears —The condition of pears is very promising for a larger yield than for several previous years Five counties the condition is above an average; twenty-three (8) counties an average; fifty-two (25) counties from 75 to 95 per cent of an average; fourteen (49) counties less than 75 per cent of an average—the figures enclosed refer to the July 20, 1877, report

Plums —The promise is very encouraging for a much larger crop this year than for the previous season as will be seen by comparison; the enclosed figures are taken from the July 20th, 1877, report. August 1st, 1878, the condition was better than an average in seven (1) counties, an average in twenty-one (13) counties, from 75 to 95 per cent of an average in fourty-five (16) counties, and less than 75 per cent of an average in condition in twenty-one (14) counties

Grapes —The prospect is favorable for a larger and better crop of grapes than last year. Eleven (7) counties report the condition above an average, seventeen (20) counties an average, sixty (48) counties from 75 to 95 per cent of an average, and only thirteen (26) counties less than 75 per cent of an average; brackets enclose figures for 1877 crop.

Quinces -The report includes twelve additional counties not reported last year, making 48 counties represented Twenty-three (10) counties report condition an average, seventeen (6) counties below an average ranging from 75 to 95 per cent of an average, and eight (20) counties the condition promises less than 75 per cent. of an average crop (July 20, 1877, report in parentheses)

Blackberries The crop of 1878 has seldom been equalled in quality or quantity: the figures enclosed are for the yield of 1877 Seventy-four (9) counties report the yield above an average ranging as high as 150 per cent , twenty-two (11) the yield was a good average, six (31) counties the yield was from 75 to 95 per cent of an average, and none less this year while last year 39 counties reported less than 75 per cent of an average yield

It will be observed that the number 100 is used to represent the acreage of 1877 of the crops named in this report, also, an average condition or yield; an increase of ten per cent. is marked 110, a decrease of five per cent is recorded 95, etc

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CROPS OF 1878.

DEPARTMENT OF AGRICULTURE, December 31.

SEASON

The weather during the fall and winter has been generally mild and pleasant, and most favorable for gathering, storing and marketing the crops

The roads generally throughout the State have been dry and in excellent condition for transit, which largely accounts for the crops going into market earlier than usual

The influence of the weather on the newly seeded small grain, the present corn crop, etc, is mentioned hereafter in connection with the several crops.

The meteorological tables published in this report, gives in detail the rain-fall, snow, and other interesting facts concerning the weather, in the three grand divisions of the State since the first of August

DRAINAGE.

The early completion of fall work, and the favorable condition of the soil, has enabled many farmers, to extend their system of drainage, and more surface and tile drainage has been completed the past summer, and fall than for years previous

Farm drainage is receiving very general attention, and the large crops, harvested the past few seasons on drained lands that had heretofore been too wet for cultivation, has had a marked effect in inducing a large number of farmers to commence the work of thorough drainage.

The encouragement by proper legislation of a system of thorough drainage, would add nearly two millions of acres of the most productive land to the cultivated area of this State This land consists largely of swamps, bogs and lakes, worthless in its present condition for agricultural purposes, and rendering the surrounding country unhealthy by reason of its miasmatic atmosphere

The above mentioned lands comprise but a small fraction of the lands in the State, that are unfit for cultivation in wet seasons. There are very few farms in the State, but that would be largely benefited by more or less drainage

It is estimated by competent authority, that the thorough drainage and proper cultivation of all lands needing surface or tile drainage, but more especially the low, level and cold, wet lands would more than double the present annual productions of this State.

It is believed that the legislature soon to convene will duly appreciate the importance of enacting such drainage laws as will enable all to enter upon the work of thorough drainage, which can but result in largely increasing the wealth, and promoting health.

CORN

The extra quality of the present corn crop throughout the State has seldom, if ever been equaled.

The weather during the fall was most favorable for the maturing of the crop, which is sound, bright, and will, as a rule, grade number one in all the markets. The late planted corn, and the injury sustained by this crop on low wet lands during the season of cultivation, has resulted in slightly reducing the average yield per acre, as compared with the previous crop

The few reports of the medium quality of corn are from localities which have suffered from unfavorable conditions (none of which were general) resulting from excessive rains in early spring, late planting, and the drouth during the summer and fall.

The crop was saved in the best condition, and in crib much earlier than usual, owing to the dry and favorable weather during the fall, which enabled farmers, with scarcely a day's exception, to gather corn since its maturity

The comparison of this crop with that of the previous 18 years presents interesting statistics concerning the corn crop, which has been and will continue for years to be the main crop of the State:

Year	Number of acres	Average yield per acre in bushels	Bushels produced	Price per bushel.	Total value	Value per acre in currency	Value per acre in gold.
1860	3,839,159	30	115,174,770	42½	$48,944 277	$12 74	.
1861	3,839,159	30	115,174,770	24	27,641,944	7 00	.
1862	3,458,903	40	138,356,135	23	32,821,911	9 49	$8 38
1863	3,773,349	22	83,013,681	62	51,479,442	13 64	9 39
1864	4,192,610	33	138,356,135	75	103,767,101	24 75	12 17
1865	5,023,996	35¼	177,095,852	29¼	51,800 536	10 31	6 56
1866	4,931,783	31.6	155,844,350	43	67,013,070	13 58	9 65
1867	4,583,655	23 8	109,091,000	68	74,281,880	16 20	11 73
1868	3,928,742	34 2	134 363,000	43	57,776,090	14 70	10 50
1869	5,237,068	23 2	121 500,000	57	69,256,000	13 22	9 91
1870	5,720,965	35 2	201,378,000	35	70,482,300	12 32	10 71
1871	5,310,469	38 3	203,391,000	32	65,085,120	12 25	11 03
1872	5,468,040	39 8	217,628,000	24	52,230,720	9 53	8 38
1873	6,839,714	21	143,634,000	32	45,962,880	6 72	5 84
1874	7,421,055	18	133,579,000	56	74,804 240	10 08	9 17
1875	8,163,265	34 3	280,000,000	34	95,200,000	11 66	10 14
1876	8,920,000	25	223,000,000	31	69,130,000	7 75	7 05
1877	8,935,411	30	269,889,742	28	77,562,879	8 68	8 26
1878	8,672,088	29	250,560,810	22	56,035,842	6 46	6 46

The 1878 acreage of corn (8,672,088), excepting the years 1876 (8,920,000,) and 1877 (8,935,411), has never been exceeded

The average yield per acre for a series of 18 years .2 bushels The average yield for 1878 is 29 bushels per acre, which is the lowest average on record, except 1863 (22), 1867 (23), 1869 (23), 1873 (21), 1874 (18), and 1876 (25)

The largest crop in bushels (280,000,000,) was harvested in 1875; the second largest (269,889,742,) in 1877, and the present (250,560,810,) ranks as the third largest crop of corn produced in this State

The very large crops of corn produced the last four years in the corn growing States has had a very depressing influence on the price, which is less at present (22 cents per bushel,) than for any year on record, and nearly one half below the average (42 cents per bushel,) of last 18 years

The 1878 crop, the third largest on record, is valued at $56,035,848, and with the exception of 1865 ($51,800,536), 1872 ($52,230,720), and 1873 ($45,962,880), will return the producer less money than any corn crop grown during the last 15 years

The average value of the present crop per acre is $6 46, which is nearly one half that of the average of the corn crops grown in the State since 1860 The profits to the producer attending corn culture at $6 46 per acre, can be easily computed when the interest, taxes and repairs of the farm, and the cost of production and marketing are considered.

The increased purchasing power of currency of late years should not be lost sight of in determining the value per acre of corn, as well as the corresponding depreciation of the value of various articles, which largely reduces the seemingly wide margin of difference between the small return per acre of corn, and other merchandise.

The average value of corn in gold for the last 17 years, as shown in the foregoing table, is $8.75 per acre, or $2 29 more than the value of the present year's crop which is $6 46, and on a gold basis is less than any previous year noted, except 1873, when the average value per acre in gold was $5 84.

WINTER WHEAT.

The area sown to winter wheat this season is larger than last year by 42,742 acres. This increase in acreage is mainly in counties north of the latitude heretofore considered favorable for the profitable culture of winter wheat

The profit attending the cultivation of winter wheat in many counties in the northern portion of the State the last few years, will doubtless increase the winter wheat acreage in many counties that have until late years, exclusively grown spring wheat

Winter wheat was generally sown late, owing to the dry weather at the usual time of seeding The dry weather continued in some of the largest winter wheat growing counties in the State, from time of seeding to the middle of November

The present condition of the wheat plant, when compared with the luxuriant growth for the corresponding period of last season, makes the growing crop appear to disadvantage.

The stand of wheat is generally good, and the ground is uniformly covered with a healthy growth The condition rapidly improved since the November rains, and the protection now by snow which, in many counties in the State, is from 8 to 15 inches, will greatly improve the prospect for next season's crop. In some localities the sleet and ice covers the wheat, and fears are entertained for the result

There is less complaint of injury by insects than for several years

The acreage seeded to winter wheat the past few years is as follows. Crop 1877, 1,736 301 acres; 1878, 2,032,843 acres; 1879, 2 075,585 acres

The condition of the crop is reported as follows In 87 out of the 102 in counties the State, 31 counties report a good average condition; 8 counties 5 per cent above; 5 counties 10 per cent above; 1 county 25 per cent above; 5 counties 40 per cent above, 5 counties 75 per cent above, 15 counties the condition is reported 5 per cent below an average; 11 counties 10 per cent below; 4 counties 15 per cent below, 5 counties 20 per cent below; 5 counties 25 per cent below; 1 county 30 per cent below; 1 county 40 per cent below, and 15 counties make no report

The following is the report of the condition of winter wheat for the corresponding date in 1877, and is given to enable all interested to make comparison.

Twenty-three counties report an average condition; 10 counties 7 per cent above; 14 counties 5 per cent above, 13 counties 15 per cent above; 6 counties 25 per cent above, 14 counties 10 per cent above; 7 counties 20 per cent above; 1 county 30 per cent above; 1 county 35 per cent above, 4 counties from 12 to 17 above, and only 3 from 10 to 25 per cent below an average

WINTER RYE

Winter rye is not as forward in growth as last season at this time The dry weather during the fall was not favorable for the usual growth of this crop The acreage is not as large as last year, but the average condition is about the same In the absence of any other basis for estimating the acreage sown to rye this fall the very incomplete returns made by assessors for 1877 was used

The acreage reported, while much below the probable area, will serve a valuable purpose in approximating the extent and distribution of winter rye o the State

The same acreage as last season is reported in 32 counties; 2 counties report an increase of 10 per cent; one county 15 per cent more; 1 county 50 per cent above; 13 counties 5 per cent less; 12 counties 10 per cent less; 6 counties 15 per cent less; 7 counties 20 per cent less; 4 counties 25 per cent less 1 county 30 and 3 counties 50 per cent less acreage than last season; while 20 counties make no report of acreage.

The acreage of this crop, as reported last year at this date, is as follows: 45 counties report the same acreage as last year; 23 counties report an increase of 5 to 10 per cent; 8 counties report an increase of from 15 to 50 per cent; 2 counties report the acreage double that of 1877 14 counties give less acreage, ranging from 5 to 20 per cent; while 10 counties make no report.

The condition of the crop is not reported in 20 counties; 52 counties report the condition up to a good average; 2 counties 5 per cent above; one county 10 per cent above; 11 counties 5 per cent below; 11 counties 10 per cent below; 2 counties 20 per cent below; 1 county 25 per cent below; and one county 30 per cent below an average

The condition same date last season is as follows.

Forty-four counties report the crop in good average condition as to growth and stand; in 18 counties the condition is 5 per cent above an average; in 20 counties the condition is 10 per cent above an average; in 7 counties the condition is from 15 to 20 above an average, and only 2 counties report less than an average, the decrease being only 5 per cent; 11 counties fail to report condition

PASTURES

The acreage of pastures, as reported by assessors the past year is about the same as the present year's acreage, which is given as returned by correspondents of this department

The acreage and value of pastures the last two years is as follows.

Year	Acres	Value per acre.	Total value.
1877	3,992,825	$3 38	$14,764,112
1878	3,983,459	3 10	12,324,647

ORCHARDS

The acreage of orchards has been more fully reported this season than last, which largely accounts for the increased acreage as compared with 1877.

The average value per acre of orchard products the past two years is about the same.

The acreage and value of the fruit crop in 1877 and 1878, as reported by correspondents, is as follows:

Year.	Acres	Value per acre.	Total value.
1877	368,958	$10 47	$3,589,672
1878	412,140	10 14	4,181,662

PRINCIPAL CROPS

For want of complete returns by assessors, the value of all the crops grown in the State can not be given, and only the principal crops are named

The crops this season are large, and compare favorably, as to yield, with former years, but the prevailing low prices have largely reduced the returns to the producer, when compared with former year, as will be seen from the following figures, giving yield and value for the present and last season:

YIELD

Article	1877	1878
Corn, bushels	269,889,742	260,560,810
Hay, ton	4,044,969	4,255,471
Winter wheat, bushels	29,510,032	30,018,147
Spring wheat, bushels	2,980,524	3,870,251
Oats, bushels	67,145,983	62,096,388
Hog product, number	2,115,804	2,345,391

VALUE.

Article.	1877.	1878.
Corn	$77,562,879	$56,035,848
Hay	21,971,368	19,904,341
Winter wheat	34,960,824	23,870,257
Spring wheat	3,044,258	3,189,263
Oats	16,209,647	12,451,889
Pasture	14,764,112	12,324,647
Orchard Fruits	3,589,672	4,181,662
Hog Product	22,738,881	16,724,384
Total	$204,808,641	$148,772,231

ACRES IN CULTIVATION

The extent of the lands cultivated in this State the last four years, and the crops grown thereon, is as follows:

The returns of agricultural statistics by assessors for 1877 furnish partial acreage of several important crops, concerning which no information heretofore has been published

The acreage for the years 1875, 1876 and 1877 is taken from the assessor's returns

The 1878 acreage is taken from the reports of correspondents made to this Department.

Article	1875.	1876	1877	1878.
Corn	8,187,914	8,815,791	7,627,735	8,672,088
Meadow	2,293,333	2,475,782	2,302,888	2,368,854
Winter and spring wheat	2,064,275	1,938,527	2,069,563	2,324,755
Oats	758,694	660,778	1,456,614	1,568,120
Pastures	4,219,347	4,289,918	3,760,071	3,983,459
Orchards	311,555	342,682	294,684	412,140
Other field products	1,471,418	788,207	711,228	711,228

The complete returns of agricultural statistics by assesors, as contemplated by the act of the 30th General Assembly, will enable this Department to publish annually a full and much more satisfactory report than heretofore of all the agricultural resources of the State

The value of these statistics is so apparent and so generally conceded by all classes, that strong hopes are entertained that proper influences will be exerted to ensure the most complete and satisfactory returns, the coming season, of the acreage and yield of the various crops grown in the State in the year 1878

PRICES FARM PRODUCTS.

The prices of farm products in producers' hands December 20, 1878, with few exceptions, are much lower than last year

The shrinkage in values of farm crops of late years, owing to the depression of business and large yield of some of the leading staples, is proportionately greater than most articles of merchandise, as may be seen by a comparison of the avenge prices for the State the past three years:

Article	1876	1877.	1878
Corn, per bushel	$ 30	$ 30	$ 22
Winter wheat, per bushel	1 01	1 19	79
Spring wheat, per bushel	92	96	68
Oats, per bushel	30	23	17
Rye, per bushel	56	52	41
Barley, per bushel	53	47	56
Buckwheat, per bushel		73	1 33
Potatoes, per bushel	58	45	47
Winter apples, per bushel	44	80	65
Hay per ton	6 25	6 35	4 32
Beef cattle, gross	3 47	3 37	2 95
Fat hogs, gross	4 09	4 23	2 80

The prices of other crops December 20, are as follows—the figures in parentheses are for the previous year: Cotton seed, per bushel, $1.10; Flax seed, per bushel, $1 05 ($1.16); Timothy seed, per bushel, $1 26 ($1 30); Clover seed, per bushel, $4 79 ($4 95), Broom Corn, per ton, $49; Tobacco, per pound, .9 (.9); Cotton Lint, per pound, 9; Wool, per pound, 25; Cows, per head, $44 ($28)

HOG PRODUCT 1878

The large crop of hogs marketed last season, in this State, has been exceeded this year by 229,587 hogs

The hogs shipped will not average as much per head as last year, by 9 pounds The average price paid is much below that of 1877—the present price per 100 pounds live weight is $2 80, while that of the previous season was $4 23 This reduction in prices has had a very depressing influence on feeders, and a number of reports indicate that the extensive losses sustaided this season by low prices and hog cholera, will prompt some of our largest shippers and feeders to discontinue the business until there is an advance in prices

The number of hogs marketed this season was 2,345,391 or 69 per cent. of the total number of 3,335,550 assessed in May last

The hog crop in Illinois the past two years, as reported to this department, is as follows, and is much below actual facts, owing to the omission by many assessors of listing young pigs, which are generally marketed before the next assessment in the following May:

Year	No hogs marketed.	Av gross wt in lbs per head	Value per 100 lbs gross	Value hogs marketed
1877	2,115,804	233	$4 23	$22,738,881
1878	2,345,391	244	2 80	16,124,384

DISEASES OF SWINE.

The diseases of swine the past season have not been so extensive or fatal as for some years past The so-called hog cholera involves such a large annual loss on the producer of the State as to seriously cripple the efforts of the largest class of our citizens, who are not in a condition to sustain such enormous drafts upon the small margin of profits received, under the most favorable conditions, from the farm

The extent of the loss each year to the farmers of Illinois can only be estimated, as the larger proportion of the losses sustained by diseases among swine is not reported

The following figures, taken from reports of correspondents, are given as an aid in approximating the great extent of the destruction from this cause The partial statistics, as reported in previous years, are given for the purpose of comparison:

Year.	No hogs assessed	Per ct died of cholera.	Number died	Value.
1876	2,665,935	17	453,208	$1,576,012
1877	2,961,366	12	358,844	1,583,415
1878	3,334,920	14	474,758	1,438,589
Average	2,987,407	14	428,936	$1,532,672

The above table indicates an average loss of hogs from disease for each of the last three years of 14 per cent or 428,936 hogs per year, valued at $1,532,672

To avert the serious loss and ruin in many instances, resulting from hog cholera, many more of our farmers will be compelled to abandon the breeding and feeding of swine until some remedy or preventative is discovered The diposal at a fair profit of surplus corn heretofore fed to hogs, will then be the difficult problem to solve.

SHEEP.

The following figures returned by assessors the past five years show that the sheep industry is not prospering, mainly for want of proper legislation, it is claimed, to protect the flocks from the ravages of worthless dogs.

The steady decrease, from year to year, in numbers, as shown by the official returns to the State Auditor, is a very strong argument as to the necessity of protecting what should be one of the most profitable branches of husbandry

The number of sheep assessed, value, and loss, is as follows:

Year	No assessed	Assessed value	Loss by dogs
1874	1,038,831	$1,676 090	
1 75	923 468	1 399 397	
187	824 854	1 18, 736	$30,578
1877	777 105	1 0 8 054	03 752
1878	77o,757	893 036	43,895

AGRICULTURAL STATISTICS

The partial returns of agricultural statistics made by assessors in May last, for the year 18 7 are given below in aggregate

The first effort to obtain this essential information has resulted in a much more satisfactory report of the agricultural productions of the State than could be reasonably expected, under the circumstances taking into consideration the false impression which so largely prevailed among farmers over the State to the effect that the additional agricultural statistics called for would increase the amount of taxes

FARM CROPS, ETC

	No Acres	No bushels produced
Corn	7 654 474	217 046 190
Winter wheat	1 500 680	21 877 023
Spring wheat	176 058	2 260 313
Oats	1 474 210	49 748 473
Rye	231 472	3 825 091
Barley	44 982	842 942
Buckwheat	15 880	207 696
Castor beans	4 533	17 738
Beans	1 545	19 944
Peas	521	13 283
Irish potatoes	95 717	6 795 349
Sweet potatoes	2 35,	148 270
Apple orchard	272 942	5 395 51
Peach orchard	12 862	402 587
Pear orchard	628	16 818
		No lbs produced
Tobacco	12 320	7 885 586
Broom corn	14 566	6,674 747
Hemp (fibre)	1 54	346 744
Cotton (lint)	205	39 86
Flax (fibre)	89 304	6 178 69,
		No tons produced
Timothy meadow	1 741 069	2,241 816
Clover meadow	105 832	145 55
Prairie meadow	4,1 947	514 948
Hungarian and millet	16 834	23 076
		No galls syrup made
Sorgo	19 335	1 227,164
		No galls wine made
Vineyards	2 612	159 944
		Value of crops produced
Turnip and other root crops	7,057	279,136
Other fruits and berries (not in orchards)	4 5'3	178 800
Other crops not named above	62 069	99 543
Pasture (not including woodland	3 612 614	
Woodland (not included as pasture)	3 6'5 756	
Uncultivated land (not included as woodland or pastures)	1 715 643	
Area city and town real estate (not included above)	287 736	

LIVE STOCK ETC, 1877

	Quantity or value
SHEEP	
Number of sheep killed by dogs	39 649
Average value per head sheep killed by dogs	$2 29
Number pounds wool shorn	3,291 677
Number fat sheep sold	241,422
Average weight per head fat sheep sold	96
DAIRY	
Cows number kept	556 466
Pounds butter sold	18 970 227
Pounds cheese sold	4 502 071
Gallons cream sold	2 744 259
Gallons milk sold	17,124,506

CATTLE.

Number fat cattle sold	423,984
Average gross weight per head fat cattle sold	1,057

HOGS.

Number of fat hogs sold	2 455 573
Average gross weight per head fat hogs sold	252
Number hogs and pigs died of cholera	1 445,268
Average gross weight per head of swine died of cholera	74

CROPS, ETC., 1879

Number of bushels of timothy seed produced	483 571
Number bushels of clover seed produced	64 686
Number bushels Hungarian and millet seed produced	16 483
Number bushels cotton seed produced	2 286
Number bushels flax seed produced	698 839
Number pounds grapes produced	3 092 748

NAMES AND POST-OFFICE ADDRESS

OF

CROP CORRESPONDENTS

DEPARTMENT OF AGRICULTURE,

For the year 1878

ADAMS COUNTY

T Butterworth, Quincy.
M Kelly, Liberty
Robert Rankin, Payson.
A R. Wallace, Camp Point
L D Lewis, Payson

ALEXANDER COUNTY.

James H Metcalf, Cairo
J E. McCrite, Toledo
J I Nowotny, Cairo
Severe Marchildon, Thebes

BOND COUNTY.

John V McFarland, Cotton Wood Grove
John Riley, Mulberry Grove
C A. Meyer, Greenville
Thos. W Hines, Pocahontas

BOONE COUNTY:

Eyl Sherman, Poplar Grove.
George Reed, Belvidere
S. C Fox, Garden Prairie
L W. Lawrence, Belvidere
E. E Moss, Belvidere

BROWN COUNTY:

Henry D Ritter, Versailles,
Geo J. Hersman, Hersman
T J Nolen, Mound Station
R T Bratten, White Oak Springs.

BUREAU COUNTY:

L D Whiting, Tiskilwa.
E S Phelps, Wyanet
James F. Mallett, Milo.
Geo W. Stone, Princeton.
J Y Spangler, New Bedford.

CALHOUN COUNTY:

A. Smith, Hardin.
George W Long, Belleview
Wm. Love, Brussels.
S. A. White, Monterey.

CARROLL COUNTY:

C W Allison, Milledgeville.
E L Byington, Lanark
Felix Oneal, Mt Carroll
Geo R Moore, Mt Carroll
W J Baily, Thompson.

CASS COUNTY:

Thomas J Crum Virginia
John M. Epler, Little Indian
John H Goodell, Chandlerville.
John Beggs, Ashland
J K. Clark, Bluff Springs

CHAMPAIGN COUNTY.

James Batterman, Pesotum
J M Morse, Gifford
W A Conkey, Homer.
J C Ware, Mohomet
B F Johnson, Champaign
J M Lewis, Urbana

CHRISTIAN COUNTY.

J B. White, Morrisonville
A. B Herdman, Morrisonville.
John W Hunter, Owaneco.
O S Nash, Sharpsburg
J. Overholt, Assumption

CLARK COUNTY

James B Sheapley, Martinsville
F B Ennis, Dolson
R R Scott, Casey.
H C Howell, Martinsville.
Samuel Park, Marshall

CLAY COUNTY.

W W Bowler, Flora
S Symond, Xenia
Crawford Erwin, Louisville
J B. Craig, Ingraham

CLINTON COUNTY.

W. H Russell, Lost Creek.
John Burton, Trenton
O. B Nichols, Sr , Carlyle
B Pullen, Centralia
Henry Grube, Beaver Creek

COLES COUNTY:

Thomas O' Brien, Ashmore.
Wm E Ginther, Charleston.
T G Chambers, Charleston
M P Threlkeld, Mattoon
T E Woods, Mattoon
Chas Pinatel, Charleston.

COOK COUNTY.

A H Dalton, Dalton
D K Draper, Dunton
Alex Wolcott, Chicago.

CRAWFORD COUNTY.

Wm. L Henstiss, Robinson
Andrew Newlin, Hutsonville
Wm H Joseph, Anapolis.
Findley Paull, Palestine

CUMBERLAND COUNTY:

Harlow Park, Greenup.
David Neal, Neoga
Lewis Brookhart, Majority Point

DEKALB COUNTY

Moses Dean, Sycamore
M. B Castle, Sandwich.
Geo Greenwood, Waterman.
T G. Knox, Genoa

DEWITT COUNTY.

E H. Robb, Waynesville
John McDonald, Farmer City.
John Vandervort, Clinton.
D W. Smith, Farmer City.
James W. Knox, Wapella.

DOUGLAS COUNTY:

Wm. B. Chandler, Tuscola.
James H. Wilson, Tuscola.
J. T. Irwin, Camargo.
S. L. Woodsworth, Arcola.
F. A. McCarty, Arcola.

DUPAGE COUNTY:

H. L. Bush, Downer's Grove
P. W. Stacy, Prospect Park.
Lewis Ellsworth, Naperville.
C. B Blodgett, Downer's Grove.
Daniel Dunham, Wayne.
W. R. Patrick, Lombard.

EDGAR COUNTY.

W O Pinnell, Kansas.
A N Workman, Scott Land
W. H Stubbs, Ferrell
B O Curtis, Paris
A. S. McCord, Paris

EDWARDS COUNTY.

W A Shelby, Maple Grove
W. J Q Orange, Albion.
A Huffman, West Salem.
Jas Dawes, Albion
Joseph Skeavington, Albion

EFFINGHAM COUNTY.

A B Kidder, Moccasin
D W Mathews, Mason
John McDonald, Edgewood
W I Perkins, Elliottstown
A Wilson, Montrose

FAYETTE COUNTY.

O E Lovett, St Elmo
Campbell Carson, Brownstown
Fr Fellwock, St. Paul
J F. Kennedy, Shabonier

FORD COUNTY.

L T Bishop, Piper City
John J Simons, Paxton
James Ogelvie, Cabery
O D Sackitt, Roberts

FRANKLIN COUNTY

Wm Drummond, Benton
F M Phipps, Benton
C C Biggs, Cave
Sam'l McClelland, Mulkeytown
Thos Neal, Ewing

FULTON COUNTY.

M Rawalt, Canton
E Baily, Vermont.
D H Gorham, Avon.
John Prickett, Lewiston.

GALLATIN COUNTY:

John Yost, Shawneetown
Albert Folsom, Equality
C W McGehee, Shawneetown
Martin Doherty, Waltonbor'gh
A K McCabe, Shawneetown

GREENE COUNTY.

C. W. Brace, Kane.
Alex. King, Athensville.
Elon A Eldred, Carrollton.
S. G. Russell, Bluffdale
Jas. Rickart, Whitehall.

GRUNDY COUNTY:

John Hurst, Minooka
Otis Baker, Morris
R K Slosson, Verona
Wm Pierce, Verona.
C E. Parker, Gardner

HAMILTON COUNTY:

E M Bowers, McLeansboro
John E Barker, Broughton.
A M Sturman, Dahlgren
Adam Crouch, Belle Prairie

HANCOCK COUNTY:

A C Hammond, Warsaw.
Emil E J Baxter, Nauvoo
B Whitaker, Warsaw.
John R Tull, Fruitland
E W. Romick, Plymouth

HARDIN COUNTY:

James A Lowry, Elizabethtown
John Mitchell, Cave-in-Rock
W L Stilly, Parkinson's Landing
L F Twitchell, Elizabethtown
W N. Warford, Sparks' Hill.

HENDERSON COUNTY:

Samuel Hutchinson, Kirkwood
Peter Groome, Raritan
John H McDougall, Biggsville.
Paul D. Salter, Kirkwood.

HENRY COUNTY:

N C. Howard, Geneseo
N C Gilbert, Geneseo
Joshua C Edwards, Cambridge
John A Widney, Woodhull
Wm. Mathis, Annawan.

IROQUOIS COUNTY:

A B Caldwell Sheldon
K Shaukland, Hooperton.
A B Cummings, Clifton
A C Johnson, Woodland
Isaac Pillotte, Martinton

JACKSON COUNTY:

L C Springer, Makanda
George B. Corey, DeSota.
Hiram Schwartz, Elkville
T T. Robinson, Pomona

JASPER COUNTY:

James Picquet, St Marie.
Wm E Barrett, Newton.
R G Scott, Ingraham
A Wilson, Montrose
E C Tehhune, Willowhill.

JEFFERSON COUNTY:

John R. Moss, Mt Vernon.
John Wilbanks, Elk Prairie.
George D Jones, Opdyke.
Geo L Whitlock, Dix

JERSEY COUNTY:

Henry Ryan, Medora.
James E Starr, Elsah
J T Curtiss, Otterville.
Wesley Park, Fieldon.

JODAVIESS COUNTY:

Henry Green, Elizabeth.
E M Bouton, Galena.
S S Brown, Galena.
J A Hammond, Hanover
Joseph Moore, Plum River.

JOHNSON COUNTY:

H T Williams, Buncombe.
James M. Dameron, Vienna.
F M Jones, Vienna
E F Morton, New Burnside.
J. P West, Lincoln Green.

KANE COUNTY:

Joseph Tefft, Elgin
J. P. Bartlett, Blackberry.
S C Rowell, Hampshire
H Chapman, Sugar Grove

KANKAKEE COUNTY:

James Chatfield, Momence.
Milo Barnard, Manteno.
R. A Lane, Kankakee City
B N McKinstry, Grant Park
I C Mosier, Wilmington

KENDALL COUNTY:

J M Gale, Bristol.
John S Seeley, Oswego.
John Hurst, Minooka
L Scofield, Newark
George M Hollenback, Millbrook

KNOX COUNTY

John Sloan, Douglas.
Isaac Hunter, Abington
G A Marshall, Abington.
R W Miles, Gilson.
H. J Vaughan, Oneida
A N Phelps, Wataga.
C. J Taylor, Galesburg

LAKE COUNTY.

John N Pollock, Millburn
Elisha Gridley, Half-Day
Henry Hart, Hainesville
H B Barrett, Wauconda
John Pope, Wadsworth.
W G Farmer, Libertyville

LASALLE COUNTY:

A. M Ebersol, Ottawa
Thomas J. Davis, Triumph
Elmer Baldwin, Farm Ridge
George A True, Utica
George W Armstrong, Seneca

LAWRENCE COUNTY:

W T Buchanan, Bridgeport.
James F Jennings, Chauncey
H K Seed, Bridgeport
Josiah Terralt, Russeville.

LEE COUNTY:

Abijah Powers, Sterling
Jas. C. Lahman Franklin Grove
Valentine Hicks, Lee Center
Thomas Clayton, Nelson.

LIVINGSTON COUNTY:

Dan R Potter, Fairbury.
L R. Bancroft, Pontiac
S. T K Prime, Dwight
Alex McIntosh, Rooks' Creek
Jas. H. Smith, Minonk.
W. C. Burleigh, Pontiac.

LOGAN COUNTY

T. G Corwine, Skelton.
C. L Downey, Atlanta.
Sorrell Doten, Mt. Pulaski
L H. Harts, Hartsburg

MACON COUNTY

T. H Barr, Argenta
H. W Davis, Decatur
James M Taylor, Boody
V Barber, Decatur
G Elliott, Harristown

MACOUPIN COUNTY

J H. Bauer, Bunker Hill
John P. Henderson, Virden
Geo W Hilliard, Brighton
H. J. Loomis, Chesterfield.
J. B Vancil, Vancil's Point

MADISON COUNTY

V. P Richmond, Moro
Irby Williams, Upper Alton
B R Hite, Collinsville
E. J. Jeffress, Marine.
E. W Mudge, Grant Fork.

MARION COUNTY.

Henry C Feltman, Salem
J. W Jennings, Walnut Hill
J D. Lear, Iuka
Aaron Warner, Salem

MARSHALL COUNTY

George F Wightman, Lacon
Henry Reader, Henry
Henry Titus, Sparland
D B Wier, Lacon

MASON COUNTY:

D W Riner, Mason City
J B. Conover, Kilbourne
H C. McIntire, Havana
E J Bowser, Forrest City
J M Ruggles, Havana

MASSAC COUNTY

J H Gray, New Columbia
J M Choat, Metropolis
A Brady, Pellonia.
L W Copland, Joppa
Dr J C Gebhart, Massac Creek

MCDONOUGH COUNTY

James N Devore, Bushnell
J K Lounes, Table Grove
Samael Frost, Macomb
W. H. Green, Bardolph
John B Isom, Blandinsville

MCHENRY COUNTY:

E. H. Seward, Marengo
James Crow, Crystal Lake
Sidney Disbrow, Alden
W H Stewart, Woodstock
T McD Richards Woodstock

MCLEAN COUNTY·

John A Ewins Danvers
Nelson Jones, Towanda
Wm. H Oglevee, Heyworth
John McCoy, Lexington.
Sylvester Peasley, Downs
Daniel McFarland, McLean

MENARD COUNTY:

W. W. Linn, Tallula.
Thomas Kincaid Athens.
R B Godbey, Greenview
John F. Fulton, Petersburg
S D Masters, Petersburg

MERCER COUNTY:

Josiah Cander, Hamlet
D. H Haves, Aledo
Dan W Sedwick Suez
Wm A Griffin, New Windsor
Joe U David, New Windsor

MONROE COUNTY.

L Warnock Columbia
George Frick, Hecker

MONTGOMERY COUNTY:

E. W Miller, Raymond.
A. F Weaver, Nokomis
John H Beatty, Nokomis
W. F Hicks, Raymond
J Bowers, Fillmore.

MORGAN COUNTY

James C Fairbank, Concord
S S Dewees, Alexander
John Gordon, Lynville
S. D Masters, Murrayville.
R C Curtiss, Waverly.

MOULTRIE COUNTY

B R Cole, Lovington
Wm Kirkwood, Sullivan
Alfred N Smyser, Sullivan
F M Porter, Lovington
John Bowers, Williamsburgh

OGLE COUNTY·

J. H White, Stillman Valley
J L Moore, Polo
A D. Clark, Kite River,
W B Derrick, Baileyville
J W Knapp, Monroe

PEORIA COUNTY

G C. Clark, Peoria
M H. Snyder, Elmwood
John A McCoy, French Grove
H Truitt, Chillicothe

PERRY COUNTY

Alex. P Baird, Four Mile
H L Burbank DuQuoin
J. C Kinzig, Tamaroa

PIATT COUNTY

D. W Smith, Farmer City
Ezra Marquiss, Sr Monticello
John W C Gray, Mackville

PIKE COUNTY·

J O. Bolin Milton.
Geo Stebbins, Summer Hill
W R Wills, Pittsfield,
W H. Yates, Perry
W R Wilson, Nebo

POPE COUNTY:

John R Smith, Golconda
H G. Cloud, New Liberty.
J H. Benham, Rose Bud
J. E. Y. Hanna, Golconda.
N. C. Weaver, New Liberty

PULASKI COUNTY:

H. C. Fearnside, Villa Ridge.
R T Calvin, Olmsted.
H L Nickens, Ullin

PUTNAM COUNTY:

H K Smith, Magnolia
W Durley, Hennepin
Joshua L Mills, Mt Palatine
Thomas Ware, Granville

RANDOLPH CNUNTY·

D. R McMaster, Sparta.
J G. Eliff, Red Bud
J. H Mace Percy
Hugh Easdale Tilden
S W McKelvey, Sparta
James Irwin, Coultersville

RICHLAND COUNTY.

R C Morris, Olney
H H Kingsbury, Olney
S M Thompson, Parkersburg.
John Camp, Claremont
W E Alcorn, Noble

ROCK ISLAND COUNTY.

Jesse S Daily, Cordova
John Buffum, Andalusia
Fred Osborn, Osborn
J A Jordan, Orion
James Taylor, Taylor Ridge

SALINE COUNTY.

W M Gregg, Harrisburg
W. M Joyner, Stone Fort
M W Willis, El Dorado
Jonathan Abney Galatia

SANGAMON COUNTY:

M D McCoy, Rochester
Watson Pickerell, Mechanicsburg
Geo M Cadwell, Williamsville.
H J Conover, Bates
Geo P Weber, Pawnee

SCHUYLER COUNTY.

T J Window, Littleton
R C Noyes, Camden
John M. Darnell, Pleasant View
L D Erwin, Rushville
Simon Doyle, Rushville

SCOTT COUNTY:

Henry L Gordon, Winchester
J M Leighton, Manchester
Henry Miner, Winchester
Geo W Martin, Winchester
Mahlon B Moore, Naples

SHELBY COUNTY:

S H Webster, Shelbyville
John Turner, Todd's Point
Charles W March, Moweaqua
E A McCracken, Lakewood
L H Turner, Strasburg

STARK COUNTY

John Lackie, Oceola.
H H Oliver, Toulon
Wm Nowlan, LaFayette
J. M. Thomas, Wyoming
J. H. Anthony, West Jersey.

ST. CLAIR COUNTY

D. F. Miller, Belleville
M T. Stookey, West Belleville
James H Scott, Shiloh.
John W Wells, Marissa
Jacob Gundlach, Belleville

STEPHENSON COUNTY

L. K Scofield, Freeport
Giles Turneaure, Freeport
F. B Walker, Dakota
C H Rosenstiel, Freeport
Hiram Snyder, Lena

TAZEWELL COUNTY

M W Messenger, Morton
G W Patton, Delevan
Geo W Minier, Minier
D Sapp, Pekin
Jas. W Robinson, Tremont

UNION COUNTY

H. C Bouton, Anna
Jas. P McLain, Jonesboro
F E Searsdale, Bradshaw

VERMILION COUNTY

Fred Tilton, Rossville
Robert Barnett, Indianola
J H Oakwood, Catlin
S. H Oakwood, Pilot
J. C Pierce, Ridge Farm
J G English, Danville

WABASH COUNTY.

J. F. Harrington, Allendale.
John W Habberton, Mount Carmel.
Joseph Litherland, Allendale
M L Tilton Mount Carmel.
Thomas Rigy, Mount Carmel

WARREN COUNTY

Henry Tubbs, Kirkwood
D C Graham, Cameron
J D Porter, Alexis
John A Gordon, Roseville

WASHINGTON COUNTY

Henry Hoffman, Nashville
Wm C Spencer, Dubois
G P Harben, Okawville
John W Yost, Nashville
H H Meyer, Stone Church
E S Noleman, Irvington

WAYNE COUNTY

Henry Kramer, Mt Erie
John Wilson, Fairfield
L M Cisne, Cisne
A M Cable, Fairfield
G M Karr, Johnsonville

WHITE COUNTY

J A Spencer, Norris City
Ezekiel Hunsinger, Burnt Prairie
Nathan Caley, Enfield
John Land, Carmi
Boone Kershaw, Grayville

WHITESIDE COUNTY.

W. H Colcord, Coleta.
J F Happer, Albany
L S. Pennington, Sterling.
P B Reynolds, Prophetstown
Tyler McWhorter, Rock Falls

WILL COUNTY

C Snoad, Joliet.
Jacob Smith, Lockport.
Alvin O Rathbun, Plainfield
J N. Fryer, Channahon
C A Westgate, Peotone

WILLIAMSON COUNTY

L M Mitchell, Corinth
D R Harrison, Herrins Prairie.
Geo W Davis, Crab Orchard
James M Washburn, Carterville

WINNEBAGO COUNTY

J M Herring, Durand
J H Kirk, Rockford.
H. J Rolasen, Durand.
Webster Osborn, Winnebago
Wm Atkinson, Harrison
C A Starr, Durand.

WOODFORD COUNTY

P A Coen, Washburn
Joseph Wylie, Minonk.
L A Gilpin, Cazenova
A H Brubaker, Benson

METEOROLOGICAL REPORTS FOR 1878.

SUMMARY *of Meteorological Observations for the Month of January, 1878, made to the Illinois Department of Agriculture, Springfield, February* 1, 1878. *Hours for taking Observations:* 7 *A. M.*, 2 *P. M.*, 9 *P. M.*

Stations.	Elevation above the sea level	Thermometer. Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Total rainfall or melted snow	Prevailing wind	Max force of wind, miles per hour	Days on which rain and snow fell	Days on which cloudiness averaged 0 8 or more	Barometer Highest	Lowest	Mean
	ft	deg	deg	deg	deg	deg	deg	inc.		No	No.	No	inc.	inc.	inc.
Northern Division.															
Genesco	650	48	1	26	46	36	3	0 3	N. E.	6	1	20			
Sandwich	681	47	−10	29	57	39	2	75	N W	1	9	19	29	29	29
Marengo	925	44	−13	25	57	36	−1	.85	N.W	30	15	11			
Como	550	45	− 4	27	49	37	3	09	N. E	36	1	11			
Hennepin	600	54	2	29	52	39	4	02	W.	2	3	21			
Central Division.															
Elmira		50	−10	25		34	−2	13			2				
Peoria	460	50	4	31	46	42	7	0.5	S	4	5	15	30	29	29
Augusta	681	58	0	29	58	43	7	1 14	N W.	4	6	14			
Mt Sterling	525	58	2	33	56	39	14	1 5	WsW	4	6	18			
Havana	475	60	0	31	60	42	9	1 28	N.W	14	10				
Southern Division.															
Louisville	500	50	0	35	50	46	11	3	N E.	4	6	20			
Anna	625	61	5	37	56	48	14	3 16	N W.	4	8	11	30	29	30

REMARKS.

SANDWICH —Snow fell on January 3d, 5th, 8th, 9th, 19th, 20th, 24th, 27th, 30th, 31st Month mild, mercury only once sinking below zero

MARENGO - Dates of rainfall. January 9th, 19th, 20th, 25th Snow on 1st, 5th, 9th, 10th, 20th, 25th, 28th, 31st Solar halos 17th, 30th January mean temperature, 13° lower than December, and 7 °4 higher than usual Januarys, 1863, 1869, 1876, were warmer One inch less rain and melted snow than usual for January

COMO —Rained January 20th Solar halo January 17th Lunar halos January 11th, 12th, 17th January has been remarkable for its high average temperature, its freedom from storms and its equable temperature

HENNEPIN Dates of rainfall; January 19th, 20th, 21st Solar halos January 12th, 26th, 29th Lunar halos 11th, 12th, 16th, 17th. Month generally cloudy Very little rain or snow No sleighing

ELMIRA —Rained January 19th, 20th Solar halos 3d, 12th, 23d 30th Lunar halos 16th, 17th

PEORIA - Dates of rainfall: January 2d, 13th, 14th, 27th, 31st. Lunar halos 11th, 12th, 15th, 16th, 17th, 18th

AUGUSTA.—Dates of rainfall: January 4th, 13th, 20th, 26th, 27th, 31st

MT STERLING.—Dates of rainfall· January 19th, 20th, 21st, 26th, 27th, 31st. Snow fell on 11 days—2d, 3d 4th, 6th, 8th, 10th, 13th, 28th, 29th, 30th, 31st. Heavy fog and frost till 12 m on the 16th; also, fog and frost on 19th, 20th Snow fell on 13th about 1 inch; on 31st 1½ inches; on the other days it did not cover the ground

HAVANA. Dates of rainfall. January 20th, 26th, 27th

LOUISVILLE —Dates of rainfall: January 13th 18th, 19th, 20th, 26th, 27th

ANNA —Rainfall: January 3rd, 12th, 13th 19th, 20th, 26th, 27th, 30th Thunder storm 27th Solar halo 2d Lunar halo 18th

Summary *of Meteorological Observations for the Month of February,* 1878, *made to the Illinois Department of Agriculture, Springfield, March* 1, 1878. *Hours for taking Observations:* 7 *A. M.*, 2 *P. M.*, 9 *P. M.*

Stations	Elevation above the sea level	Thermometer. Highest	Lowest	Mean	Range of	Highest daily mean.	Lowest daily mean	Total rainfall or melted snow	Prevailing wind	Max force of wind, miles per hour	Days on which rain and snow fell	Days on which cloudiness averaged 0 8 or more	Barometer. Highest	Lowest	Mean
	ft	deg	deg	deg	deg	deg	deg	inc		No	No	No	inc	inc	inc.
Northern Division															
Geneseo	650	55	8	32	47	44	17	2	N E	5	7	13			
Sandwich	681	58	5	36	53	46	20	1 1	N E.	1. 1	9	19	30	29	29
Marengo	925	52	12	30	40	39	19	1 33	N E.	6	8	18	.		
Henry	600	60	12	36	48	51	22	1 8	N.		...	18			
Central Division															
Elmira		57	1	31	56	46	14	1 63	.		9				
Peoria	460	62	15	37	47	52	26	2 25	S.	9	12	12	30	28	29
Augusta	681	63	8	36	55	50	19	3 31	N W	3	11	14	.	.	
Mt Sterling	525	62	10	38	52	52	24	3 8	n&nw	4	13	20	..		
Havana	175	62	14	37	48	47	24	3 5	n&nw	6 15	12		. .	.	
Springfield	.	60	27	43	33	51	36	...	N W.		..	..	..	..	
Southern Division															
Louisville	500	60	18	33	42	48	28	3 7	S W		7	14	.		
Anna	625	69	27	42	42	55	28	1 8	N W	4	8	15	30	29	30

REMARKS.

Marengo Had frost every day, save 21st. Solar halos 3d, 11th, 13th, 20th Lunar halos 10th and 11th February, 1878, has been the warmest recorded here in 17 years 8°.9 above the usual mean, and 0° 3 warmer than February, 1877 The precipitation has been 0 13 inches more than usual Mean temperature of the past winter 31° 08, or 11° 02 above the usual mean, and 3° 3 above the mean of the warmest winter before recorded here (1862-3) The precipitation has been 5 56 inches, or 0 65 inches more than usual No sleighing this has been the case but twice before in 17 years

Hennepin Solar halos February 11th, 13th, 20th Lunar halo February 11th Considerable cloudy weather and some rain during the month Very little frost in the ground at any time On the 27th blue birds Meadow larks appeared on the 28th Prairie chickens commenced to coo

Elmira Thunder storm February 19th Solar halo February 10th February 20th wild geese and ducks going north, also, arrival of blue bird; 22d arrival of robin; 23d, black bird.

Peoria Frost February 1st, 2d, 3d, 4th, 9th, 10th, 11th, 23d, 25th, 27th, 28th Relative humidity 78 6

Augusta Total depth of snow during month 8½ inches. Frost on 20th

Mt Sterling Total depth of snow for the month 13 inches. Very slight hail storm on 19th. Frost on 26th, 27th, 28th Corona observed 9 P M. on the 18

Havana Thunder storm on 19th Hail on 19th The extreme high temperature of the month is remarkable The sun finds no snow, ice or frozen earth to counteract its influence; hence the heat is more than usually felt on vegetation, and also on the insect world, of which are from four to six weeks in advance of their season The earth being warmed, the radiation will prevent damages to vegetation, under ordinary circumstances, by cooler northern currents. An extremely early spring is predicted

Springfield.—Thunder storm 19th and 20th Hail 19th Frost 26th and 27th.

Anna.—Solar halos 14th, 19th. Lunar halo 18th.

SUMMARY *of Meteorological Observation for the month of March*, 1878, *made to the Illinois Department of Agriculture, Springfield, May* 1, 1878. *Hours for taking observations:* 7 *A. M.*, 2 *P. M*, 9 *P. M.*

Stations	Elevation above sea level	Thermometer. Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Barometer. Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Wind. Prevailing	Maximum velocity or force—miles per hour	Rain and Snow. Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of the month	No. of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
	Feet.	Deg	Deg.	Deg	Deg	Deg	Deg	Inch	Inch	Inch.	Inch.	Inch	Inch.	Dir	Miles	No	Inch.	Inch	No.		
Northern Division																					
Geneseo	650	72	31	45	41	60	34														
Sandwich	681	71	27	47	44	66	27	30	29	29	.38	29	29	N E	6	6	3 50		8		
Marengo	925	69	18	41	51	60	28							S	1	3	1.10	3	21		76
Hennepin	600	78	28	48	50	62	36							S E	5	13	2 72		13		
Central Division														S	1				19		
Elmira																					
Peoria	460	72	24	44	48																
Augusta	681	74	29	50	45	62	39	29	29	29	.8	29	29	S.	8	11		1			
Mt Sterling	525	78	31	49	47	62	35							N W.	4	13	2 1		9		
Havana	475	78	32	52	46	65	37							S W.	5	14	5 1		7		76
Springfield		77	29	48	48											15	4 8		18		
Southern Division		72	26	49	46	64	40							S	7	9	2.9				
Louisville	500	80	27	54	53	66	42												10		
Anna	625	82	36	53	46	69	41	30	29	30	.8	30	29	N W.			1 8				
		75	28	48	47	63	37	29	29	29	8	29	29	S.	5	6	2 2		6		
														S					4		

REMARKS.

GENESEO —Rainfall March 1st, 2d, 3d, 9th, 27th and 30th.

MARENGO —Thunder storms March 2d and 8th Frost March 1st, 4th, 5th, 7th, 11th, 15th, 19th, 20th, 22d, 24th, 25th, 28th, 29th and 31st Solar halo on 20th The warmest March for many years 12 deg 59 min above the usual mean 4 deg 4 min above the warmest March before recorded here, and about 2 deg 3 min lower than the mean of seventeen Aprils past In this period (17) four Aprils have been colder than this March The precipitation has been 0 13 inches more than usual Sowed wheat on 1st Planted potatoes on 13th First wild blossoms (cowslips) on 21st Grass green all the month Gooseberry leaves breaking out on the 11th

HENNEPIN —Frost on 15th, 24th, 25th and 29th Solar halos on 1st, 5th, 6th, 9th, 11th and 29th Lunar halo on 11th

ELMIRA —Frost on 20th and 29th. Solar halo on 7th.

PEORIA —Thunder storm on 6th Lunar halo on 11th

AUGUSTA —Thunder storms on 6th and 12th. Frost on 17th, 25th and 29th On 6th grass starting up 8th, leaf buds of lilac

MT STERLING —Thunder storms on 6th, 12th, 20th, 21st, 27th, 29th and 30th Frost on 17th 25th and 29th 1st, wild geese flying west, 9½ A M First appearance of blue birds On 6th, first croaking of frogs and appearance of wasps on the 8th, wild ducks flying south-east, at 7 A M: On 21st, first appearance of larks On 17th and 25th slight ice, but no injury to tender vegetables, and probably none to the peaches, in full bloom during the last week or ten days

HAVANA —Thunder storm on 6th Hail storm on 13th.

SPRINGFIELD Thunder storm on 6th and 20th Frost on five days

LOUISVILLE —Rainfall on 2d, 3d, 10th, 12th, 28th and 30th Thunder storms on 28th and 30th

ANNA —Thunder storms on 6th, 12th, 21st and 29th On night of 9th very stormy and rainy, wind averaging from 40 to 50 miles an hour from the south

SANDWICH —Thunder storms March 15th and 29th Frosts March 1st, 4th, 5th, 11th, 12th, 14th, 15th, 17th, 18th, 19th, 20th, 25th, 28th, 29th, 31st

SUMMARY *of Meteorological Observations for the month of May*, 1878, *made to the Illinois Department of Agriculture, Springfield, June* 1, 1878. *Hours for taking Observations:* 7 *a. m.*, 2 *P. M.*, 9 *p. m.*

Stations		Elevation above sea level	Thermom						Barometer						Wind		Rain and Snow.			No. of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County	Post Office	Feet	°	°	°	°	°	°	Inch	Inch	Inch	Inch	Inch	Inch.	Dir	Miles	No	Inch	Inch	No		Deg.
Northern Division																						
DeKalb	Sandwich	651	77	40	63	37	71	47	29 98	29 40	29 71	38	29 88	29 42	W	1 74	12	1.8	. .	25	3.1	90.5
Kane	Elgin	777	76	42	55	34	69	47	28 55	27 99	28.30	56	28 48	28 01	N E	3	8	3 19	. . .	12	....	. . .
McHenry	Marengo	925	77	35	53	42	65	43		.	..	. ..	.	..	nw&e	60	11	4 25	. ...	11	.....	....
Putnam	Hennepin	600	80	40	60	43	72		..	..	. .	. .	. .	.	N.W	... ..	.	6 1	. .	19	...	.. ..
Whiteside	Como	550	85	35	57	50	71	45	.		...		.		N W	55	15	6 33	.	8	. ...	.. ..
Central Division																						
Brown	Mt Sterling	525	83	42	62	40	74	51	. .		..	.	. .		W	4	17	6 8	. . .	24	....	.....
Knox	Galesburg	822	82	41	58	41	71	46	29 50	28.92	29 23	.42	.	. .	N W	20	14	7 87	...	8	....	.....
Hancock	Augusta	681	80	41	59	47	72	44	.			..			W.	4	18	4 91	. . .	20	.....	.....
Peoria	Peoria	460	83	38	61	45	75	47	29 85	29.22	29 57	63	29 82	29 27	W	3	12	4.45	. .	8	. ...	.. ..
Stark	Elmira	.	83	37	55	46	68	42	..	...	..	.	.	.		.. .	12	4 43	..	....	....	.....
Sangamon	Springfield	615	81	40	57	41	72	43		.		. .	..	..	w s w	3		. ..	...	... .	....	.....
Southern Division																						
Alexander	Cairo	325	86	44	68	42	78	48	30.24	29 66	29 95	57	30 19	29 75	S	34	13 12	4 41	. . .	8	.....	66.71
Clay	Louisville	500	87	39	66	46	74	49		.	....	. .	...	...	S W	4	9	5.8	. . .	25	....	. . .
Jefferson	Mt Vernon	... .	86	40	65	46	73	46		.		. .		. .	..	... ..	12	4 5	....	...	....	.....
Montgomery	Hillsboro	... .	88	40	64	48	78	51	29 60	29 10	29 35	.50	29 47	29 15	E &	2	14	9 6	.	..	. ...	.....
Union	Anna	625	87	42	67	45	78	52	30 45	29 81	30 15	65	30 29	29 ·5	S S	5	9	5 73	..	6	. .	...
Williamson	Carterville	500	89	44	65	45	81	51	...	...	.	...	.. ..	. .	W.	6	.....	.	. . .	23	..	49.30

REMARKS

SANDWICH —N E Ballou. Ob'r Thunder storm May 1st, 2d, 7th 18th, 19th, 23d, 29th. Frost 3d, 4th, 5th, 6th, 10th, 12th, 14th, 15th, 22d Solar halo 13th, Lunar halo 13 Oxone scale is constructed from 0-10, the mean for month being 3 1 The manifestions of this atmospheric manifestation is most decided during thunder storms

ELGIN.—E S Giddings, Ob'r Thunder storms on 7th and 8th Frost on 12th, 13th, 14th and 15th Crop prospects good

MARENGO J. W James, Ob'r Thunder storms on 1st, 7th, 8th and 19th. Frost on 10th and 13th Solar halo on 3d, 13th, and 17th. Lunar halo on 13th Mean temperature of May 2°95, lower than usual, and but 3° higher than April's mean—usual difference 12° 6 May 1861, 1866 and 1867 have been colder The maximum temperature has always been higher in 17 Mays Rainfall 1 inch more than usual, and exceeded only in 5 Mays in 17 years Mean temperature of spring 1878 48° 7 or 5°45 higher than usual, and 0° 7 above, the warmest before in 17 years Total precipitation 9 86 inches, or 1 33 inches more than usual.

HENNEPIN.—E. Osborn, Ob'r Frost on 13th and 14th Solar halos on 6th, 13th, 14th, 17th, 24th

COMO —S A. Maxwell, Ob'r. Thunder storms 7th, 18th, 20th 23d, 26th, 29th and 31st Hail storm 7th and 23d Frost on 11th, 12th, 13th and 14th Solar halo 13th Meteor observed 8 30 P M on 26th. Month has been unusually wet with considerable wind from the east and northwest

MT STERLING. —Wm W. Bower Ob'r. Thunder storms 7th, 17th, 18th, 19th, 23d, 24th, 29th, and 31st Hail on 7th and 11th Frost on 4th About 6 P M, May 23d, a powerful hurricane or cyclone passed along about 6 to 12 miles west of us from west to northwest, demolishing houses, barns, orchards, raising up and carrying horses, cattle, sheep, trees, &c, for a considerable distance A wagon bed was carried about two-and-a-half miles And just a short distance from its greatest fury it seemed to vanish away instantly The width seemed to be not more than 20 rods; outside of this the trees, etc, were prostrated for some 20 rods more, with their tops towards the channel, at nearly right angles towards its course, as though forced by a powerful current directly towards it, to support the same in its course; it did an immense amount of damage in its short progress in this county but no lives were lost, but several persons were severely injured It stripped trees in its course of bark and boughs clean from root to top and tore houses to splinters; smashed wagons, etc, into fragments, even twisting off axle trees of wagons and straightening out the tires such a hashing up was never seen before—it was truly fearful

GALESBURG. —W L Comstock, Ob'r Thunder storms on 1st, 2d, 8th, 18th, 19th, 28th, 29th and 31st. Frost on 4th, 5th, 13th and 14th Solar halo on 13th. Cold wind on 12th, with little snow in the afternoon for a few minutes

AUGUSTA S B Mead, Ob'r Thunder storms on 1st, 2d, 7th, 8th, 17th and 18th Hail May 11th Frost on 4th.

PEORIA —Fred Brendel, Ob'r Thunder storm on 7th, 8th, 18th, 19th, 28th, 29th, 31st White frost on May 13th

ELMIRA —O A Blanchard, Ob'r Thunder storms 7th, 28th, 31st Frost on 4th, 12th, 13th Solar halos 13th, 14th and 17th There was a very cool spell from May 10th to 13th It is thought that the cool weather checked the flow of sap and caused blighting in orchards; much fruit falling. Frost on 12th and 13th browned potato vines and nipped the corn, little field corn up, however

LOUISVILLE —D H Chase, Ob'r Thunder storms on 18th, 19th, 20th, 21st, 22d, 23d, 29th, 31st Frost on 9th, 10th, 13th, 14th and 15th. Solar halo on 2d. Very wet weather with cool spells

MT VERNON.—L H Johnson, Ob'r Rain on the 2d, 7th, 11th, 12th 15th 18th, 19th, 21st, 26th,

MONTGOMERY —A H H Rountree, Ob'r. Thunder storms on the 2d, 11th, 16th, 18th, 19th, 22d, 23d, 24th, 25th, 26th, 29th, 31st Hail storm on 2d Frost on 11th, 13th, 14th and 15th Solar halo on 17th We get no rain with steady wind from the west or any direction of the west, but a little west of south. We get our storms mostly on the rebound, as it were after a steady east or south wind by western wind bringing up the clouds Have never observed rain when barometer indicated above 29°60

ANNA —John D Newbegin. Thunder storms on May 2d, 7th, 18th, 20th, 24th, 25th 31st. Meteor observed on 28th.

SUMMARY *of Meteorological Observations for the Month of June*, 1878, *made to the Illinois Department of Agriculture, Springfield, July* 1, 1878. *Hours for taking Observations:* 7 *A. M.*, 2 *P. M.*, 9 *P. M.*

Stations		Elevation above sea level	Thermom						Barometer						Wind.		Rain and Snow			No. of days on which cloudiness averaged 0.8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force-miles per hour.	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County	Post Office.	Feet	°	°	°	°	°	°	Inch	Inch	Inch	Inch	Inch	Inch	Dir	Miles	No	Inch.	Inch.	No	Deg	Deg
Northern Division																						
Kane	Elgin	777	86	50	62	36	79	50	29 41	28 88	29 19	53	29 40	28 90	nwne	3	10	3 09		15		
McHenry	Marengo	925	89	44	64	45	79	50							se nw	38	12	2.46		8		
Mercer	Aledo		8	55	72	35	80	55							S W	5	13	5 60		10		
Putnam	Hennepin	600	93	54	70	39	82	55							S.	2		3 10		14		
Whiteside	Como	550	92	52	67	40	79	53							S. W	28	15	2 81		8		
Central Division.																						
Brown	Mt Sterling	525	90	56	70	34	81	57							se nw	5	17	3.00		16		
Hancock	Augusta	681	86	54	68	32	79	54							N W.	3	14	2 99		7		
Knox	Galesburg	840	88	52	65	53	79	53	29 47	29 00	29 27	53	29 46	29 01	swnw	15	19	6 80		8		
Peoria	Peoria	460	93	50	71	43	83	55	29 82	29 30	29 58	51	29 80	29 34	W	4	11	3.49		5		
Sangamon	Springfield	615	84	58	73	26	82	58	29 50	29 40	29 28	51	29 45	29 05	S E		10	2 67				
Stark	Elmira		92	50	66	42	77	52									9	3 18				
Southern Division.																						
Alexander	Cairo	368	89	57	73	32	81	64	30 18	29 56	29 94	61	30 13	29 69	S	22	9	4 61		9		69 17
Clay	Louisville	500	92	58	70	34	78	58							S W	5	8	3 20		15		
Jefferson	Mt. Vernon		90	58	73	32	82	59									6	75				
Macoupin	Carlinville		93	56	73	37	87	58							N W.	4	8	1 90		27		
Montgomery	Hillsboro		96	50	72	46	89	57	29 62	29 12	29 40	48	29 61	29 12	sw w	2	8	1 00				

REMARKS

MARENGO.—J W James, Ob'r Thunder storms, 1st, 2d, 25th. Solar halos, 2d, 6th, 9th, 25th. Lunar halo, 9th June's mean temperature has been 2°.7 lower than usual. In 17 years past, only Junes, 1862, 1866 and 1869 were cooler From 1st to 27th it was the coldest June in 17 years The amount of rain has been 1 47 inches less than usual Junes, only '61, '63, '64 and '70 have been drier since 1851

ALEDO.—L D Holmes, Ob'r. Thunder storm on 1st. Rain on 1st, 2d, 7th, 8th, 9th, 10th, 11th, 19th, 20th, 25th, 28th, 29th and 30th.

HENNEPIN.—Ethan Osborn, Ob'r Solar halo, 2d.

COMO —S. A Maxwell, Obr Thunder storms, 1st, 2d, 10th, 19th, 20th, 25th, 29th and 30th Hail Storm, 20th The month has been specially adapted to the needs of Agriculture, just enough rain and seasonable The thunder showers of the 10th and 20th, were generated at times when the wind was blowing and had been for hours before, from the northwest; something new in Meteorological phenomena for this locality; have frequent cold showers unaccompanied by an electric display under the condition stated, but never before like these storms (10-12). Small thunder showers usually come from the west or southwest, with the wind, and the heavier storms to come against it, or at an angle of 90° from it, i e from the west, if the wind, for hours before, blows from the south, and from the northwest if the wind has been blowing from the southwest.

MT. STERLING —Wm W Bower, Ob'r Thunder storms, 1st, 2d, 7th 15th, 20th, 25th and 30th There was a very heavy fog on the morning of the 15th; heavy thunder storm passed over at 7 P M, south of this point, and heavy thunder storm followed by a very brilliant double rainbow in the east, the reflection was almost as perfect as the bow and lasted until sunset

AUGUSTA —S B Mead Ob'r. Thunder storms, 2d, 15th, 19th, 20th, 25th, 28th and 30th mean temperature and rainfall, the past year, as follows, inches of rainfall in brackets: 1877- July, 74°54, (6 24); August 71°31, (3 08); September, 66°70, (3 27); October, 53°92, (9 27); November, 36°68, (2 89); December, 42°66, (4 0) 1878 January 29°76, (1 14); February, 36°51, (3.31); March, 49°53, (5 16), April, 57°0, (3 28); May, 59°29, (4 91); June, 74°00, (2 89)

GALESBURG —M L Comstock, Ob'r Thunder storms on 1st, 2d, 25th, 28th, 29th and 30th Hail on 2d Solar halo 20th Vivid lightning 1st, 2d, 25th, 28th and 30th; distant lightning south on 26th and 27th; north on 29th

PEORIA —Fred Brendel, Ob'r Thunder storms on 1st, 2d, 19th, 20th, 25th and 30th Relative humidity for the month, 74 (7 A. M), 54 5 (2 P M); 73 (9 P M)

SPRINGFIELD —Rainfall on 2d, 7th, 9th, 10th, 11th, 13th, 14th, 20th, 25th and 30th

ELMIRA —O A Blanchard, Ob'r Thunder storm on the 30th Diffuse lightning in southeast at 9 P M, 26th and 2·45 P. M on 28th and 9 P M, 30th, in southwest

CAIRO —Wm R Smith, Ob'r Thunder storms, 4th and 16th Solar halo 1st Lunar halo, 2d.

LOUISVILLE —D H Chase, Ob'r Dates of lightning, 2d, 3d, 4th, 7th, 8th, 9th, 11th, 12th, 15th, 18th, 19th, 20th, 25th, 26th and 27th

MT VERNON —L H Johnson, Ob'r. Thunder storms on 9th, 27th and 28th Rainfall on 7th, 9th, 14th, 16th, 27th and 28th Lunar halo on 5th

CARLINVILLE.—Charles Robertson, Ob'r. Thunder storms on 28th and 30th.

HILLSBORO —A H H Rountree, Ob'r Thunder storms on 7th, 9th, 11th, 13th, 15th, 20th, 28th and 30th Wind storm on 20th 5-10 inch rain on the 9th; all other rains during the month, only sprinkles 10th, temperature 50°, 60°, 64°, -average 58°—coolest day of the month

SUMMARY *of Meteorological Observations for the month of July*, 1878, *made to the Illinois Department of Agriculture, Springfield, Aug.* 1, 1878. *Hours for taking Observations: 7 a. m., 2 p. m., 9 p. m.*

Stations.		Elevation above sea level	Thermom.						Barometer						Wind		Rain and Snow			No. of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County.	Post Office	Feet.	°	°	°	°	°	°	Inch	Inch	Inch	Inch.	Inch	Inch	Dir	Miles	No	Inch	Inch.	No.	Deg.	Deg.
Northern Division																						
DeKalb	Sandwich	681	100	67	77	32	88	69	29 89	29 37	29 72	52	29 87	29 47	N E	1 39	9	2 70			4.06	89.8
DuPage	Naperville		100	59	76	41	89	65							N. W.							
Henry	Geneseo	650	93	59	75	34	85	61							N E	3	4	2 80				
Kane	Elgin	777	93	62	75	31	88	65	29.42	28 82	29 24	60	29.40	29 80	ne-se	2	5	3 22				
McHenry	Marengo	925	95	54	74	41	84	62							N E	3	8	4 73		5		
Putnam	Hennepin	600	102	63	80	39	92	68							W.	1		1.10		13		
Whiteside	Lyndon	550	102	60	79	42	91	65									13	4.15		3		
Central Division.																						
Brown	Mt Sterling	525	97	66	80	31	89	70								4	7	4 70		15		
Hancock	Augusta	681	95	62	78	33	87	67							S W.	4	8					
Mercer	Aledo		103	68	85	35	93	68							s & sw	2	5	1 45		10		
Peoria	Peoria	460	101	61	82	41	91	68	29 81	29 13	29 62	67	29.77	29 30	E	3	5	2 58		2		65 5
Stark	Elmira		101	58	76	43	87	63									7	2 16				
Southern Division																						
Alexander	Cairo	368	96	66	82	30	90	71	30.13	29 67	29.96	.45	30 08	29 69	N	6	10	2 81		8		72.
Clay	Louisville	500	9[illegible]	60	79	38	89	72							S W.		3	6 50		14		
Jasper	St. Marie		98	65	85	33	89	70							N. E.	7	3	1.10		1		
Jefferson	Mt Vernon		100	65	80	35	90	72							w s w	4	5	4 00		12		
Macoupin	Carlinville		100	62	82	38	91	70							S W	4	10	95		23		
Madison	Upper Alton		98	66	82	32	89	71	29.80	29 30	29 57	.37	29 70	29 33	N&S.	2	5	1 29		28		
Marion	Centralia		98	61	82	61	90	71							N E.		7	3 17		15		
Montgomery	Hillsboro		104	60	82	44	94	69	29 60	29 10	29 35	50	29 60	29 10	S W	3	6	90				
Pope	Golconda		99	68	82	31	88	76							N E.	3	10	5 66		3		
White	Grayville	600	102	70	86	32	92	75							N W.		9			13		

REMARKS.

SANDWICH.—N. E. Ballou, Ob'r. Thunder storms 10th, 12th, 14th, 17th, 31st. The eclipse showed here almost without interruption, save an occasional blur from cumuli clouds; the view was very discernable and interesting.

ELGIN —E L. Giddings, Ob'r Thunder storms on the 9th and 12th. Rain on the 1st, 11th, 12th, 25th and 26th. Meteor observed on the 6th, at 8 A. M

MARENGO —J. W James, Ob'r Thunder storms on the 10th and 11th. Solar halos observed on the 10th, 19th, 23d and 28th July's mean temperature 3°1 higher than usual In 17 years, only July 1868 and 1870 were warmer The week succeeding the heavy rains of 11th and 12th was the sultriest and most trying experienced in the west. Rain fall 0 75 inch more than usual 90 per cent of the rain fell in 18 hours on the 11th and 12th Commenced having July 8th; cutting wheat July 22d; oats on 24th

HENNEPIN —Ethan Osborn, Ob'r Solar halos observed on the 9th and 11th. Month very dry

LYNDON.—S A. Maxwell, Ob'r The month has been remarkable for extreme heat, and only equalled by the summers of 1868 and 1870 No thunder storm at this point Storms observed near this place on 10th and 11th

MT STERLING.—W W Bower, Ob'r Thunder storms on the 1st, 7th, 17th and 18th. Eclipse of sun observed in afternoon of 29th, about seven-eighths total

AUGUSTA —S B Mead, Ob'r Rain fell on the 1st, 3d, 6th, 18th, 20th, 25th, 26th and 31st Thunder storm on 6th

ALEDO —L D Holmes, Ob'r Thunder storm on 31st Thermometer on 12th in shade 103° and 132° in the sun

PEORIA —Fred Brendel, Ob'r Thunder storms on the 1st, 6th and 17th

ELMIRA —O A Blanchard, Ob'r Thunder storms on 15th and 31st Solar halos on 10th, 19th and 20th

CAIRO —W R Smith, Ob'r. Thunder storms on the 6th, 7th, 8th, 13th, 26th and 29th

LOUISVILLE —D H Chase Ob'r Thunder storms on the 1st and 26th

ST MARIE —James Piquet, Ob'r Lunar halo on the 10th Light rain on 18th and 20th. For 21 days (July 10-31) no clouds were visible Distant thunder storms not noted

MT VERNON —L H Johnson, Ob'r Thunder storms on the 1st, 25th and 28th Partial eclipse of the sun observed on 29th between 3 and 5 P M; only one-sixth of the sun was visible while the eclipse was at its height

CARLINVILLE Charles Robertson, Ob'r Lunar halo on the 14th Parhelia observed at 6:30 A M on the 10th inst

UPPER ALTON.—W W Leverett, Ob'r. The month has been notable here for absence of rain, thunder and lighting Rainfall on 1st 4-10 inch; 1-10 inch on 5th; 2-100 inch on 7th; 2-100 inch on 8th; 6-10 inch on 25th; 15-100 inch on the 25th Distant, low, rumbling thunder from 2 to 3 P M on 13th, (only thunder in July) The solar eclipse on 29th; sky clear in the west during the time.

CENTRALIA —J L Hallam, Ob'r Thunder storms on 5th, 8th and 30th. Heavy thunder and lighting on 5th, 8th and 30th

HILLSBORO —A H H Rountree, Ob'r Excessive drouth and heat; 10 days the daily mean was 90° and above Thunder storm July 18th Sprinkle of rain on 5th, 6th, 8th and 13th, shower on 25th and 26th On 29th eclipse, beautifully visible all the time

GOLCONDA J E Y Hanna, Ob'r Thunder on 1st, 3d, 4th, 6th, 13th 17th, 18th, 19th, 26th and 29th

GRAYVILLE J S Rinehart, Ob'r Thunder storms on 13th and 26th. Shower of rain on 1st. Wind E and N E, an unusual occurrence; usually comes from S and S W, and N and N. W.

SUMMARY *of Meteorological Observations for the month of August*, 1878, *made to the Illinois Department of Agriculture, Springfield, September* 1, 1878. *Hours for taking Observations:* 7 *a. m.*, 2 *p. m.*, 9 *p. m.*

Stations		Elevation above sea level	Thermom					Barometer						Wind.		Rain and snow			No of days on which cloudiness averaged 0.8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County	Post Office.	Feet	°	°	°	°	°	°	Inch.	Inch	Inch	Inch	Inch.	Inch	Dir	Miles	No	Inch.	Inch	No	Deg	Deg
Northern Division																						
Henry	Geneseo	650	87	57	70	30	77	62									8	5 9				
Kane	Elgin	777	86	55	76	31	81	62	29 31	29 00	29 15	.31	29 30	29 03	SW	2	9	4 03		8		
McHenry	Marengo	925	88	51	70	37	76	62							wnwne	4	8	3 52		3		
Putnam	Hennepin	600	95	60	76	35	85	72							W	1		5 60		6		
Whiteside	Lyndon	540	95	58	77	37	84	69							SW	4	10	5 75				
Central Division																						
Brown	Mt Sterling	525	95	60	77	35	86	69							SW	4	9	7 50				
Hancock	Augusta	681	92	59	74	33	83	66							SW	3	7			18		
Mercer	Aledo		100	4	82	36	86	69							nw & w	5	7	5 87		8		
Peoria	Peoria	460	97	58	78	39	84	70	29 73	29 45	29 56	27	29 71	29 47	E	5	12	4 42		2		
Stark	Elmira		96	56	76	40	79	62									10	6 34				
Southern Division																						
Alexander	Cairo	368	94	64	81	30	87	70	30 10	29.77	29 92	33	30 06	29 81	SW	4	11	3 45		5		70 3
Clay	Louisville	500	100	60	82	40	89	74							SW		4	3 00		8		
Jasper	St Marie		94	60	76	34	89	68							NE	5	6	1 11		5		
Jefferson	Mt. Vernon		97	64	80	33	88	72							W	4	9	4 70		18		
Madison	Upper Alton	775	98	62	79	36	86	73	29 50	29 10	29 25	40	29 50	29 13	N &SW	5	8	1 03		30		
Marion	Centralia		99	64			87	71							nw& sw		7	2 70		13		
Montgomery	Hillsboro		102	79	90	23	88	67	29 50	29 30	29 42	20	29 50	29 33	NW	1	6	3.80				
Pope	Golconda		101	66	81	35	88	72							NE	4	10	1 12				
White	Grayville.		100	66	83	100	90	72							S & SW	2	6			3		

REMARKS.

ELGIN.—E L Giddings, Ob'r. Rain fell on the 1st, 4th, 8th, 10th, 14th, 15th, 18th, 19th and 24th Thunder storms on the 1st, 4th, 8th, 14th and 18th.

MARENGO.—John W. James, Ob'r. Thunder storms on the 1st, 4th, 8th, 13th, 14th, 18th and 19th Solar halos on 10th August's mean temperature has been 2° higher than usual—only Augusts of 1867 and 1876 were warmer Amount of rain ¼ inch less than usual Mean temperature of the summer of 69° 4 or 0° 77 higher than usual Precipitation 10 71 inches, or 1 inch less than usual.

HENNEPIN —Ethan Osborn, Ob'r. There has been considerable lightning during the month The heaviest rain of the season, 1 8-10 inches, on the 19th and 20th

LYNDON —S A Maxwell, Ob'r Thunder storms on the 4th, 8th, 13th, 14th, 15th, 19th, 23d and 24th Hail storm on 14th Mirage on the 5th

MT. STERLING - Wm W Bower, Ob'r. Thunder storms on the 4th, 8th, 9th, 17th, 19th and 24th.

AUGUSTA.—S B. Mead, Ob'r Thunder storms on the 4th, 8th, 9th, 15th, 20th and 24th The July rainfall was 3 85 inches

ALEDO —L D Holmes, Ob'r Thunder storm on the 12th Rain on the 4th, 8th, 9th and 19th Cloudy on the 1st, 2d, 3d, 6th, 7th, 11th, 18th, 20th 21st, 22d, 23d, 24th, 27th, 28th and 30th.

PEORIA.—Fred Brendel, Ob'r Thunder storms on the 1st, 4th, 13th, 14th, 19th, and 24th

ELMIRA —O. A Blanchard, Ob'r Thunder storms on the 5th, 8th, 14th and 19th The heavy rainfall of the season began at 8.05 P M on the 19th In 1 hour and 55 minutes there fell 3 20 inches The thunder and lighting was nearly incessant The rain continued until 2 A. M of the 20th Total rainfall in two days, 3 97 inches

CAIRO —W R Smith, Ob'r. Thunder storms on the 2d, 5th, 20th, 21st, 25th and 31st Lunar halos on the 8th

LOUISVILLE -D H Chase, Ob'r Thunder storms on 9th, 10th, 24th and 31st The summer has been hot and dry

ST MARIE —James Picquet, Ob'r Thunder storm on the 1st. Lunar halos on the 7th and 18th On the 1st a hail storm swept diagonally across Jasper county, running from N W to S E Hail stones 2¼ inches in diameter The belt of country on which hail fell was about ten miles wide Immediately after the hail storm, a black cloud ran in the same direction, but in a very narrow belt of perhaps less than a mile in width

MT. VERNON —L H Johnson, Ob'r Thunder storms on the 14th and 24th Hail storm on the 14th Frost on 26th and 27th Aurora on the 1st Eclipse of the moon at 9 P M on the 12th

UPPER ALTON. —W Leverett, Ob'r 1st, sheet lightning in the night 1st, 2d and 4th, low rumbling thunder 8th thunder, lightning and strong wind from 7 to 8.15 P M 9th, gentle rain from 6:15 P M to 2 A M 12th, eclipse of moon, sky clear 19th and 22d, distant thunder and sheet lightning in evening 30th, slight sprinkling from 6 to 6.15 P M Rain on the 2d, from 12 M to 1 P M - 03 inch 4th, 12.30 to 1 P M, 02 inch 8th, 7:30 to 8 P M, 02 inch 9th, 6 A M and 6 30 P M, 02 inch. 15th, 3 30 to 4:15 P M, 04 inch. 17th, 10 to 10.30 A M, 05 inch 20th, 1.45 to 9 A. M, 10 inch 31st, in night, .05 inch

CENTRALIA —J L Hallam, Ob'r Thunder storm on the 2d 1st, thunder and lightning. 8th, heavy clouds with sheet lightning N and W 9th, forked, brilliant lightning 14th, one terrible clap of thunder in almost clear sky

HILLSBORO —A H H Rountree, Ob'r Thunder storms on the 9th, 13th, 17th, 19th and 24th Floating cloud on 13th rained 3 10 inches Lunar eclipse visible on 12th. Hottest day, Saturday, August 24th 102°. Storm at night Hot month, 20 days, from 90° to 102°, 10 days above 80°, and 1 day, below 80° Have had but little thunder, lightning and wind, with one rain Very dry meadows, dried up ponds, and streams dried up

GOLCONDA —J E Y. Hanna, Ob'r. Thunder storms on the 1st, 2d, 3d, 4th, 6th, 9th. 10th, 11th, 15th, 19th, 20th and 31st Hail storm on the 2d

GRAYVILLE —J L Rhinehart, Ob'r Thunder storm on the 2d Solar halo on the 1st. Light showers on the 1st, 4th, 6th, 9th, 25th and 30th.

SUMMARY *of Meteorological Observations for the month of September,* 1878, *made to the Illinois Department of Agriculture, Springfield, October* 1, 1878. *Hours for taking Obsevations:* 7 *a. m.*, 2 *p. m.*, 9 *p. m.*

Stations.		Elevation above sea level	Thermom						Barometer						Wind		Rain and Snow			No of days on which cloud incns averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County	Post Office	Feet.	°	°	°	°	°	°	Inch	Inch.	Inch.	Inch	Inch	Inch.	Dir.	Miles	No	Inch.	Inch.	No	Deg.	Deg.
Northern Division																						
Kane	Elgin	777	85	42	63	43	77	50	29 59	28 75	29 29	84	29 52	28 93	S	4	4	1 59	..	8	....	....
McHenry	Marengo	925	89	34	62	55	77	48							S	5	6	1.46	..	2	..	...
Putnam	Hennepin	600	89	45	69	44	81	55							S	2		90	....	6	....	....
Whiteside	Fulton	540	90	37	65	53	79	51							SW	6	9	1.80	...	2	...	....
Central Division																						
Brown	Mt. Sterling	525	91	45	68	46	80	53							S E	5	7	2 5	.	5	...	....
Hancock	Augusta	681	88	43	65	45	78	50							NW	5	8	1 13		9	..	....
Mercer	Aledo	.	94	54	74	40	82	61							SW	5	6	1 7	..	10	...	....
Peoria	Peoria	460	91	43	69	48	81	54	30 04	29 35	29 69	69	30 02	29 41	S	4	5	97		1	...	69
Stark	Elmira		90	32	61	62	75	47							...	....	5	.....	1 02	....	....	....
Southern Division																						
Alexander	Cairo	368	88	49	70	39	80	59	30 27	29 79	30 02	47	30 25	29 86	S	5	7			4	.	70
Jefferson	Mt Vernon	.	94	50	72	44	83	59							n & ne	6	5	2 99	.	19	..	....
Madison	Upper Alton	750	92	46	69	46	81	56	29 70	29 30	29 46	.40	29 70	29 30	S & N	.	5	5	..	15	....	....
Marion	Centralia		94	42			81	51							s w nw		4	3 07	...	5	....	..
Montgomery	Hillsboro		93	44	69	49	81	56	29 77	29 30	29 54	47	29 72	29 28	SW	3	4	2 4	.	.	....	....
Pope	Golconda	.	96	51	73	45	82	61							N E	5	8	3 3	.	4	....	....
Richland	Olney	.	94	44	71	50	81	55	29 80	29.31	29 58	.49	29 75	29 37	s w se	5	8	2 96		9	....	....
White	Grayville	600	95	54	74	95	84	65							s & sw	5	5	1 6	....	4	....	....

REMARKS.

ELGIN.—E L. Geddings, Ob'r.: Frost on the 11th, 12th, 13th 21st and 26th.

MARENGO.—J W James, Ob'r: Thunder storms on the 24th and 25th Frost on the 11th, 12th, 13th, 14th and 21st September's mean is 2°3 higher than usual, and its rainfall a trifle more than one-third the usual amount First frost of the season on the 11th. Period without frost, 121 days

FULTON —S A Maxwell, Ob'r: Thunder storms on the 8th, 19th, 24th, 25th. Frost on the 11th, 12th 13th, 14th and 27th First frost of the season on the 11th First severe frost on the 14th

MT. STERLING —WM W Bower, Ob'r: Thunder storms on the 23d, 24th and 25th Frost on 11th, 12th, 19th, 21st 22d and 27th

AUGUSTA —S B. Mead, Ob'r: Thunder storms on the 24th and 25th. Frost on the 11th, 12th and 21st

ALEDO.—L D Holmes, Ob'r: Frost on the 13th, 14th, 15th, 16th, 17th and 18th Rain on the 8th

PEORIA —Fred Brendel, Ob'r: Thunder storm on the 24th and 25th

ELMIRA.—O A Blanchard, Ob'r: Thunder storm on the 25th Frost on the 11th, 12th, 13th and 14th First frost of any importance on the 14th, which cut and cured the corn leaves on low land, also in some places on high ground

CAIRO —WM R Smith Ob'r. Thunder storm on the 25th was the severest of the season. Lunar halos observed on the 14th, 16th and 17th

MT VERNON —L H. Johnson, Ob'r. Thunder storms on the 20th and 28th Frost on the 14th and 21st

UPPER ALTON —W Leverett, Ob'r Slight frost on the 21st. Distant rumbling thunder on the 25th, P M

CENTRALIA J. L Hallam, Ob'r Thunder storm on the 20th and 25th Frost on the 12th and 14th

HILLSBORO —A H H Rountree Ob'r: Rain fell on the 9th, 20th, 25th and 28th Light frost on the 11th, 21st and 27th Very dry month for wells, springs and underground fountains Westerly winds drive away expected rains

GOLCONDA J E Y Hanna, Ob'r. Thunder storms on the 2d, 3d and 25th Solar halos on the 8th

GRAYVILLE —J L Rhinehart Ob'r: Thunder storms on the 10th, 20th, 25th, 27th and 28th Frost on the 13th Very dry.

HENNEPIN —Ethan Osborn, Ob'r.: Frost on the 11th, 12th and 21st The month has been dry Corn ripening fast, and out of the way of frost More diffuse lightning than usual for the season

OLNEY.—L. J. Schifferstein, Ob'r: Thunder storms on 2d and 25th Frost on the 10th, 12th, 15th, 20th, 21st and 22d Lunar halos observed on the 5th, 7th, 10th, 14th, 18th and 19th. Rain on the 1st, 2d, 8th, 9th, 20th and 24th

SUMMARY *of Meteorological Observations for the month of October*, 1878, *made to the Illinois Department of Agriculture, Springfield, November* 1, 1878. *Hours for taking Observations:* 7 *a. m.*, 2 *p. m.*, 9 *p. m.*

Stations		Elevation above sea level.	Thermom						Barometer						Wind		Rain and Snow			No. of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of month			
County	Post Office	Feet	°	°	°	°	°	°	Inch.	Inch	Inch.	Inch	Inch.	Inch.	Dir	Miles	No	Inch.	Inch.	No	Deg	Deg.
Northern Division																						
Henry	Geneseo	650	81	20	48	61	66	24									6	3.1		10		
Kane	Elgin	777	77	19		58	69		29 51	28 78		73	29.49	28 85	s&sw	4	12	3 31		10		
McHenry	Marengo	925	78	17	46	61	67	22							s&nw	6	11	4 71		8		
Putnam	Hennepin	600	83	26	53	57	75	29							S	2		2 9		14		
Whiteside	Fulton	540	81	22	50	59	72	29							S W	6	13	5 43		7		
Winnebago	Durand		78	12	45	66	63	23							S W	4	11	3 26	5½	7		
Central Division																						
Brown	Mt Sterling	525	86	22	54	64	78	32							S E	4	10	2 8		9		
Hancock	Augusta	681	82	21	51	61	73	29							s&nw	5	12	2 85		20		
Peoria	Peoria	460	83	27	53	55	74	30	30 04	29 13	29 65	.91	30 01	29 27	S	5	11	3 96		5		68
Stark	Elmira		79	18	47	61	68	22									10	3 20	1			
Southern Division.																						
Clay	Louisville	500	90	25	60	65	75	42							S W	4	6	3 4		7		
Jefferson	Mt Vernon		83	27	51	56									w-nw	8	11	8.				
Jasper	St Marie		94	20	54	74	75	31							E	7	13	3 57		8		
Madison	Upper Alton	725	85	27	55	58	74	32	30.50	29 76	30 16	80	30 56	29 86	snwn	4	8	1 73		22		
Marion	Centralia		84	28	57	56	76	35							S W		4	3 55		13		
Montgomery	Hillsboro		86	26	64	60	76	36	29 75	29 15	29 41	60	29 72	29 15	S W	4	8	5				
Pope	Golconda		92	31	60	61	80	37							S &W	5	10	3 74		4		
Richland	Olney		85	32	58	53	76	34	29 75	29 28	29 49	47	29 75	29 30	S W	6	11	7 12		18		

REMARKS

ELGIN —E L Giddings, Ob'r: Thunder storms on the 8th and 15th. Rained on the 1st, 8th, 10th, 12th, 15th, 16th, 21st, 24th and 25th Morning of the 27th had four inches of snow On the 31st about one inch, all gone by night

MARENGO —J W James, Ob'r: Thunder storms on the 8th and 13th Frost on the 6th, 12th, 18th, 19th, 22d, 23d, 26th and 31st Solar halos on the 7th Lunar halos on the 6th, 10th and 12th, Mean temperature of October 1878, 0° 26 above average Mean of period between 1st to 16th, 54° 9, which is unusually warm for the season Amount of rain and melted snow, 2 53 inches more than the average; excepting October, 1877, it has been the wettest seen here The snow fall of the 26th was the heaviest, so early in the season, on record

HENNEPIN —Ethan Osborn, Ob'r· Lunar halos observed on the 6th, 10th and 12th Solar halos on the 4th On the 15th, rain, accompanied with the heaviest wind storm of the season, from the south-west—nearly all the rail fence running north and south was blown down, and many trees The wind was from the south-west, and the path of the storm was nearly two miles wide

FULTON —S A Maxwell, Ob'r : Thunder storms on the 1st, 8th, 10th 13th 15th and 16th. Hail storm on the 8th Lunar halo on the 12th Meteors on the 20th The month has been remarkable for the extraordinary number of thunder storms, not less than eight occurring during the month More than three thunder storms in the same year, in the month of October have not happened before, within fifteen years, at this place There has been a greater number of windy days than is usual, though not near so many as in October, 1871 The month's rainfall is about an average.

DURAND —C A Starr, Ob'r Thunder and hail storm on the 8th Frost on the 12th. 18th, 19th, 22d, 23d, 27th, 28th and 31st

MT STERLING. —Wm W Bower, Ob'r : Thunder storms on the 1st, 8th 10th 13th and 15th Frost on the 2d, 6th, 12th and 19th

AUGUSTA. S B Mead, Ob'r : Thunder storms on the 1st, 8th and 13th Frost on the 18th and 19th. Lunar halos on the 12th On the 10th diffuse lightning in the north Drizzling rain on the 21st Light rain on the 25th and 26th

PEORIA —Fred Brendle, Ob'r.· Thunder storms on the 8th and 13th Frost on the 19th, 27th, 28th, 30th and 31st Lunar halos on the 10th and 12th.

ELMIRA —O. A Blanchard, Ob'r · Thunder storms on the 8th, 13th, 15th and 16th On the 16th, a storm of cyclonic character passed through this station; width of path, about ⅛ mile, course, S W to N E , passing in about one minute, overturning sheep sheds, empty corn cribs, breaking down trees, fences, &c Parhelia 4:45 P M on the 4th First frost of the month on the 6th On 12th parhelia at 5 03 P M. Paraselene at 7 10 P M On 19th ice froze 3-16ths of an inch. One inch snow on the 26th, the first of the season

LOUISVILLE —D H Chase, Ob'r · Thunder storms on the 1st, 9th, 16th and 26th Frost and ice on the 12th, 19th, 27th, 28th, 29th, 30th and 31st

MT VERNON L H. Johnson, Ob'r. Frost on the 19th. 20th, 21st, 23d, 26st, 27th, 28th, 29th, 30th and 31st; unusually severe on the 20th, 23d, 24th and 26th A light snow fell on the 22d

ST MARIE —James Picquet, Ob'r. Thunder storms on the 9th, 13th and 16th Frost on the 6th, 12th, 19th, 23d, 28th, 29th and 31st Lunar halos on the 6th, 9th and 12th Fog on the 1st and 5th First killing frost on the 19th First snow on 22d Lightning in the evening of the 25th

UPPER ALTON W Leverett, Ob'r Light frost on 18th. Heavy frost on 19th, 22d, 23d, 27th, 28th, 29th, 30th and 31st; also ice, except 18th Solar halos on 28th Rain on the 1st, 4th 7th, 8th, 13th, 14th 15th, 16th and 21st

CENTRALIA J L Hallam Ob'r Frost on the 6th, 12th, 28th, 29th, 30th and 31st Rain on the 1st, 10th 11th 21st 22d and 26th Thunder on the 9th and 16th

HILLSBORO —A H, H Rountree, Ob'r Thunder storms on the 9th 10th and 16th Frost on the 11th, 19th, 20th, 21st, 23d, 24th, 27th, 28th, 29th, 30th and 31st Severe frost on the 19th. Water scarce, wells and springs weak Westerly turn of wind is unfavorable for rain. North-east storm of the 18th and 19th not noted by barometer Have for 15 years observed that in winter and summer the barometer does not note north-eastern storms

GOLCONDA —J E Y Hanna, Ob'r. Thunder storms on the 1st, 9th and 16th Frost on the 13th, 19th, 23d, 28th, 29th, 30th and 31st. Solar halo on the 26th Lunar halo on the 3d Light snow on the 27th

OLNEY —L J Schifferstein, Ob'r Thunder storms on the 1st, 4th, 5th 8th, 9th, 11th, 13th, 16th, 21st, 22d, 25th, 26th and 29th Hail storm on 9th and 22d Frost on the 5th, 7th, 20th, 23d, 24th, 28th, 30th and 31st Solar halos on the 6th, 12th, 13th and 15th Lunar halos on the 6th, 9th, 12th, 13th and 15th

SUMMARY *of Meteorological Observations for the month of November*, 1878, *made to the Illinois Department of Agriculture, Springfield, December* 1, 1878. *Hours for taking Observations: 7 a. m., 2 p. m., 9 p. m.*

Stations		Elevation above sea level	Thermom						Barometer						Wind		Rain and Snow			No of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow, at close of month			
County	Post Office.	Feet	°	°	°	°	°	°	Inch.	Inch	Inch	Inch	Inch	Inch.	Dir	Miles	No	Inch.	Inch.	No	Deg	Deg
Northern Division.																						
Henry	Geneseo	650	59	20	37	39	48	29										90				
Kane	Elgin	777	52	24	37	28	46	30	29 59	28 82	29 22	77	29 55	28.86	N W	3	5	1 46		14		
McHenry	Marengo	925	51	22	36	29	44	29							nw&n	4	6	1.06		9		
Putnam	Hennepin	600	65	26	42	37	49	33							W	1	4	10		11		
Whiteside	Fulton	540	60	22	41	38	51	32							N W	6	8	.92		8		
Winnebago	Durand		58	22	37		44	30							N W	2	4	1.15		8		
Central Division.																						
Brown	Mt Sterling	525	69	13	44	56	55	34							N W	4	7	1 50		10		
Hancock	Augusta	681	64	23	41	41	57	30							N W	4	6	1 17	1 50	20		
Peoria	Peoria	460	61	28	42	33	56	33	30.08	29 23	29 66	84	30 02	29 32	E	3	3	91		7		75
Stark	Elmira		62	18	35	44	51	26									5	60				
Southern Division.																						
Clay	Louisville	500	75	28	47	47	60	39							S W		5	2 30		15		
Jasper	St. Marie		62	25	44	37	57	36							W	6	12	1 48		10		
Jefferson	Mt. Vernon		65	32	48	33	53	36							N&W	4	7	8				
Madison	Upper Alton	725	72	30	46	42	61	40	30 50	29 25	30 09	1 25	30.30	29.83	ns nw	4	5	1 75		23		
Marion	Centralia		65	31	43	31	56	32							swnw		5	93		11		
Montgomery	Hillsboro		64	28	46	36	56	38	29 72	28.97	29 37	77	29 74	29 12	w nw	1	5	50		18		
Pope	Golconda		78	30	50	48	65	35							N W	5	9	4 8		8		
Richland	Olney		73	31	45	42	59	35	29 82	28 99	29.45	83	29 79	29 06	W	5	9	2.15		5		

REMARKS

ELGIN.—E. L Giddings, Ob'r: Rain fell on the 6th, 10th, 15th, 16th and 20th.

MARENGO.—J. W. James, Ob'r: Rain on the 6th, 10th, 11th and 20th Very light snow on the 21st and 25th—smallest amount in November for many years Frost every day except 2d, 6th, 11th, 16th, 17th, 18th and 19th. Solar halos on the 14th, 27th and 30th Lunar halos on 2d, 14th and 30th November's mean temperature has been 3 °2 above the mean of seventeen Novembers past The range of the thermometer was the shortest, for November, in the period named, the maximum temperature having always b fore been higher and the minimum lower. The amount of rain has been ⅜ of an inch less than usual Mean temperature of the autumn of 1878 has been 48 °2, or 1 °9 higher than usual The amount of rain and melted snow has been 7 23 inches, or 1 07 inches less th in usual

HENNEPIN Ethan Osborn, Ob'r: Solar halo on the 11th. Lunar halo on the 2d and 11th.

FULTON. S A Maxwell, Ob'r: Lunar halos on the 2d and 29th

MT STERLING.—W W Bower, Ob'r: Thunder storm on the 6th. Frost on the 8th, 9th, 2 d and 29th Light rain on the 5th, 6th, 7th, 10th, 11th and 15th. Hazy and fog on the 8th, 9th, 16th, 17th and 18th

AGUSTA S B Mead, Ob'r.: Rain on the 6th, 10th, 11th, 15th, 16th and 30th. Light snow on the 30th, 1½ inches

PEORIA —Fred. Brendle, Ob'r: Frost on the 1st, 3d, 8th, 9th, 26th, 27 h, 28th, 29th and 30th

ELMIRA O. A Blanchard, Ob'r: The month has been most favorable for farm work, and many farmers have gathered their corn Blackbirds remained in flocks up to the 27th Solar halos on the 14th and 29th Lunar halos on the 5th and 14th Paraselene on the 2d at 9 p m Parhelia at 4 p m on the 29th Diffuse lightning at 6 a m on the 6th, in the S W

LOUISVILLE—D H Chase, Ob'r.. Thunder storms on the 11th and 16th

ST MARIE —James Picquet Ob'r: Lunar halos on the 6th and 30th Rain on the 10th, 11th 15th, 16th, 20th, 21st, 26th and 27th, with snow

MT VERNON —L H Johnson, Ob,r: Hail and snow storm on the 27th Frost on the 1st, 2d, 3d 4th, 6th, 8th, 9th, 11th, 15th 17th, 18th, 23d, 26th and 29th.

UPPER ALTON W Leverett, Ob'r. Frost on the 1st, 4th and 8th, and remaining days of the month On the 18th a dense fog until 10 a m, clouds resting on the earth's surface A distinctly perceptible earthquake, two vibrations, E and W, at about 11.40 p m

CENTRALIA —J L Hallam, Ob'r: Frost on the 13th, 14th, 23d, 24th, 26th, 27th, 28th and 29th Light rain on the 6th and 10th

HILLSBORO —A H H Rountree, Ob'r. Rain on the 6th and 9th Sprinkle on the 10th and 14th Light sleet on the morning of the 27th Winds from any direction of the west are unfavorable for rain or snow, and as soon after a storm as the winds gets westwardly, the storm is essentially over Weather during the month has been mild and beautiful

GOLCONDA —J. E Y Hanna, Ob'r. Thunder storms on the 7th and 15th. Frost on 13 days Solar halos on the 7th Lunar halos on the 15th

OLNEY —Louis J. Schifferstein, Ob'r. Hail storm on the 27th Frost on the 1st, 2d, 3d 4th, 8th, 12th, 13th and 23d Lunar halos on the 14th and 30th More or less haziness prevailed throughout the month

SUMMARY *of Meteorological Observations for the month of December*, 1878, *made to the Illinois Department of Agriculture, Springfield, January* 1, 1879. *Hours for taking observations:* 7 *a. m.*, 2 *p. m.*, 9 *p. m.*

Stations		Elevation above sea level	Thermom						Barometer.						Wind.		Rain and Snow			No. of days on which cloudiness averaged 0 8 or more	Ozone	Relative humidity
			Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Highest	Lowest	Mean	Range of	Highest daily mean	Lowest daily mean	Prevailing	Maximum velocity or force—miles per hour	Days on which rain or snow fell	Total rainfall or melted snow	Depth of snow at close of the month			
County.	Post Office	Feet	°	°	°	°	°	°	Inch	Inch	Inch.	Inch	Inch	Inch.	Dir	Miles	No	Inch.	Inch	No.	Deg.	Deg.
Northern Division.																						
Henry	Geneseo	650	40	14	16	54	36	3							N W.			3 30	12			
Kane	Elgin	777	30	16	17	46	37	7	29 70	28 70	29 40	1 00	29 66	28.70	W	3	4	.40	12	18		
McHenry	Marengo	925	39	16	15	55	35	9							N W.	4	10	2 46	20	16		
Putnam	Hennepin	600	49	14	19		39	4							W	2		1 80	18	17		
Whiteside	Lyndon	540	45	16	20	61	39	4							N W.	6	10	2 00	11	9		
Winnebago	Durand		40	12	18		33	7							W	2	8	.35	15¾	10		
Central Division																						
Brown	Mt Sterling	525	56	12	26	68	47	1							W	7	13	3 10	12	18		
Hancock	Augusta	681	53	17	19	70	44	4							N W.	6	8		37	25		
Peoria	Peoria	460	48	15	21	63	41	2	30 24	29.13	29 74	1.10	30 19	29 21	W	3	8	2.08	15	10		79
Stark	Elmira		44	23	14	67	34	12									7	03	11			
Southern Division																						
Clay	Louisville	500	46	10	25	56	43	4							W.		10	6 30	6	15		
Jasper	St Marie		54	12	28	66	48	3							W	7	18	3 12	10 75	14		
Jefferson	Mt. Vernon		63	10	31	73	55	2									8		5			
Madison	Upper Alton	725	56	2	26	58	49	4	30 60	29 75	30 25	85	30 58	29 84	swsenw	4	10	5.43	2.5	28		
Marion	Centralia		56	6	31	56	47	12							N W.		6	1.50		3		
Pope	Golconda		65	2	31	67	54	9							N W.	5	14	4 73	9	13		
Richland	Olney		52	6	24	58	47	16	29 88	29.02	29 41	86	29 87	29 08	N W.	4	14	2 74	15 60	23		

REMARKS FOR DECEMBER.

GENESEO.—W. T Allen, Ob'r. Lunar halos on the 31st.

ELGIN —E. L. Giddings, Ob'r. Rained very little on the 1st, 2d and 3d Snowed on the 10th, 13th, 14th, 20th and 21st. Have had 20 inches of snow.

MARENGO —J. W. James, Ob'r. Frost every day Solar halos on the 28th. Lunar halos on the 2d December's mean temperature has been 6°.4 below the average; only December '72 and '76 have been colder. The mean of the first half of the month was 25° 9; of the last half only 5°.6 The amount of rain and melted snow was 57 inches more than usual The mean temperature of the year 1878 was 47°.5, or 2°.9 higher than usual The total precipitation was 32.44 inches, or 0.91 inches less than usual; only 1870 was a warmer year at this point.

HENNEPIN —Ethan Osborn, Ob'r. The month has been unusually dry, with no rain, but a liberal supply of snow Ground not frozen under the snow, Water much needed for watering stock, and household use Solar halo on the 7th. Lunar halo on the 2d.

LYNDON.—S A Maxwell, Ob'r. Solar halo on the 28th Lunar halo on the 7th and 28th. Meteors on the 27th

MT STERLING —W W. Bower, Ob'r. Hail storm on the 8th. Frost on the 7th. Snow on the 13th, 14th, 15th, 16th, 17th, 20th, 26th and 29th

AUGUSTA.—S B Mead, Ob'r Snow commenced falling Nov. 30th, at 7 P M., and continued to 7 A M. Dec 1, snowed from 7 A M to 1 P M. six inches of snow fell on the 8th On the 13th with wind from the N E, had a very heavy snow storm—18 inches of snow More snow this month at this point than has been recorded for 45 years.

PEORIA —Fred Brendel, Ob'r Days of snow or rain: 1st, 6th, 8th, 13th, 14th, 21st, 22d, 26th Frost on the 2d, 5th and 31st.

ELMIRA —O. A Blanchard, Ob'r Solar halo on the 7th. Lunar halos on the 7th. Snow during month, 21.67 inches Parhelia on 19th, 25th and 28th.

ST MARIE —James Picquet, Ob'r Rain on the 1st, 3d, 9th and 13th Snow on 7th, 8th, 9th, 16th, 17th, 19th, 20th, 21st, 23d and 29th Lunar halos on the 2d, 5th, 7th, 12th and 31st.

MT VERNON.—L. H. Johnson, Ob'r. Frost on 1st, 3d, 7th, 9th, 12th, 15th, 19th, 20th and 23d

UPPER ALTON — W Leverett, Ob'r Very heavy frost on the 6th and other dates 2 "Mock Suns" on the 19th, between 7 and 8 A. M Trees, shrubs, etc, encased in sleet or ice on the 8th, 9th, 10th, 14th and 15th. Dense fog on 9th and 16th

CENTRALIA —J L Hallam, Ob'r. Had 9 inches of snow during the month Frost 28 days during the month Light sleet and rain on the 8th and 14th Snow of 7 inches on the 21st 6° below zero on the 24th and 25th.

GOLCONDA.—J E Y Hanna, Ob'r Meteors observed on the 12th, and the N W, at 3 P M, increased to foggy, with a smell of burning—a fall of temperature in two hours of 12°

OLNEY.—Louis Schifferstein, Ob'r Frost on the 5th, 7th, 10th, 11th, 12th, 13th, 17th, 18th, 19th, 20th, 23d, 24th, 25th, 27th, 28th, 30th and 31st Rain on the 1st, 3d, 6th and 8th. Snow on the 7th, 8th, 9th, 15th, 16th, 17th, 18th, 20th, 21st, 23d, 26th and 29th.

Table showing the Average yield in bushels and value of the Crops named for 1878.

Counties	CORN					WINTER WHEAT				
	Acreage	Av yield per acre in bu	Crop in bushels	Price per bushel Dec 20	Value of crop	Acreage	Yield in bushels per acre	Yield in bushels	Price per bushel Aug 1	Value of crop
Adams	109 269	21	2,294,649	30	$688,395	66,805	17	1,135,685	81	$919 904
Alexander	14 113	24	338,712	27	91,172	7,356	9	66,204	75	49 653
Bond	38,340	16	513 440	23	118,091	25,779	16	412,464	80	329,971
Boone	37,689	38	1,432,182	22	315,080	658	18	11,844	100	11,844
Brown	33,940	22	746,680	25	186,670	15,910	16	255,040	76	193,830
Bureau	163,468	33	5,394,444	22	1,186,778					
Calhoun	17,373	25	434,325	30	130 297	15,047	17	255,799	80	204,639
Carroll	76,619	40	3,064 760	20	612,952	3 372	22	74,184	85	63 056
Cass	76 721	30	2,301,630	22	506 359	16 322	17	277 474	80	221,979
Champaign	233,371	26	6 067,646	19	1,152 853	9 040	16	144 640	77	111,372
Christian	161 058	27	4,348 566	21	913,199	7,395	14	103,530	82	84 894
Clark	46,781	25	1,164,525	25	291,131	37,778	13	490 464	75	367,848
Clay	50,837	13	660 881	27	178 478	24 401	16	390,416	75	292 812
Clinton	66 010	24	1 584 240	25	396,060	77 062	16	1,232,992	78	961,533
Coles	102,616	22	2,257,552	22	496 661	17,038	18	306,684	80	245,342
Cook	37,172	32	1,189 504	31	368,746					
Crawford	39 278	19	745 332	25	186,333	26 216	13	341,198	80	272,958
Cumberland	34,881	15	523,215	25	130,804	11,310	14	158 340	75	118,755
DeKalb	121,797	38	4,628 286	24	1 061,596					
DeWitt	97 750	24	2,346 000	20	469,200	1,386	15	20,790	80	16,632
Douglas	99,009	25	2 475 225	20	495 045	2,122	15	31,830	78	24,827
DuPage	46 227	15	2 080 215	22	457 647					
Edgar	94,182	57	3,484 734	21	731 794	13 326	15	199 890	75	149,917
Edwards	22,101	30	663 030	30	198 909	18,610	15	279 600	85	237,660
Effingham	46 190	12	692 850	30	207 855	29,068	15	445 020	75	333 765
Fayette	49,151	12	589,812	25	147,453	42,429	16	678 736	75	509 052
Ford	152,992	20	3,059,840	22	673,165	213	18	3,834	*82	3 143
Franklin	35,158	21	738 318	27	199 316	30,139	10	304 390	75	228 292
Fulton	145,010	25	3 625,250	20	725 050	17 215	18	309,870	55	264,389
Gallatin	23,376	25	584 400	24	140 256	16 980	7½	127 350	80	101,880
Greene	78,315	31	2 427,765	25	606 941	54,111	17	919,887	75	689,915
Grundy	106,007	18	1,908,126	23	438 868					
Hamilton	154,914	25	3 872 850	25	968 212	5,165	8½	43 902	80	35 121
Hancock	128 153	33	4 229 049	20	845,810	10,220	18	183 960	75	137,970
Hardin	11 815	20	236 300	25	59 075	4 913	9	44,187	65	28,916
Henderson	92 154	35	3 225 390	20	645 078	8,625	19	68,875	80	55,100
Henry	151,024	45	6,796 080	23	1,495 138					
Iroquois	315 178	22	6 933,916	22	1 525,462	1,986	20	39,720	*82	32,570
Jackson	29 705	15	445,575	30	133 672	24 334	9	189 006	75	366,754
Jasper	31 738	7	222,166	32	71,093	17,265	15½	267 607	76	203 381
Jefferson	30,927	26	960,102	26	249 627	44,325	13	576,225	80	460,980
Jersey	28,844	22	634 568	30	190,370	66,465	17½	1,162 087	80	929,669
Jo Daviess	81 558	41	3,343 878	19	635 337	2 861	22	62 912	85	53,500
Johnson	28,184	23	648,232	35	226 881	18,831	9	169 479	70	118 635
Kane	39 581	40	1 583,240	25	395 810	750	17½	12,775	100	12,775
Kankakee	169 782	30	5,094 460	23	1,171,496					
Kendall	39 559	35	1 384 565	23	318,450					
Knox	171,194	32	5 478 208	20	1,095,642	2,698	16	43,168	95	41 009
Lake	22 687	34	771,348	25	192,840	647	20	12 940	*82	10 610
LaSalle	225 781	30	6,773 430	24	1 625,623	2 974	17	50 558	110	55 613
Lawrence	23 487	15	352,305	33	116,261	34,373	15½	532,781	78	415,569
Lee	108,135	41	4,433 535	21	931,042					
Livingston	300,710	24	7 217 040	22	1,587,749					
Logan	133,348	28	3,733 744	21	784,086	11,493	18½	212,657	75	159 492
Macon	166 639	27	4 499,253	20	899,851	7,408	17½	129,640	75	97 230
Macoupin	100 992	22	2 221 824	25	555,456	94,570	15	1,418 550	80	1,134 840
Madison	91,836	21	1 928,556	23	443,568	116,904	16	1,870,464	83	1,552,485
Marion	50,106	23	1,152 438	25	288,109	10,162	22	223 564	70	156,494
Marshall	114 434	26	2,975 284	25	743 821	396	16½	6 534	90	5,880
Mason	61 454	20	1,229,080	25	307,270	7,898	16	126,368	81	102 358
Massac	14,075	23	337,525	35	118,134	15,388	6	92,328	80	73,862

Crop Statement—Continued

Counties	CORN					WINTER WHEAT				
	Acreage	Av. yield per acre in bu.	Crop in bushels	Price per bushel Dec. 20	Value of crop	Acreage	Yield in bushels per acre	Yield in bushels	Price per bushel Aug. 1	Value of crop
McDonough	11[illegible] 19[illegible]	25	2 804 97[illegible]	70	$ [illegible]60 995	3 297	15	49 455	80	39 564
McHenry	56 191	40	2 247 640	2[illegible]	[illegible]1 910	1 [illegible]	20	30 [illegible]0	8[illegible]	26 09[illegible]
McLean	[illegible]6 8[illegible]1	7	9 034 [illegible]18	1	1 909 819	6 451	17	109 06	8[illegible]	93 [illegible]16
Menard	70 030	[illegible]1	2 1[illegible]0 930	1	[illegible]89[illegible]	6 114	17½	106 99[illegible]	7[illegible]	81 [illegible]48
Mercer	10[illegible] 9[illegible]4	41	4 6[illegible]	[illegible]	8 [illegible]7[illegible]1	[illegible]808	20	56 100	80	44 928
Monroe	26 11[illegible]	[illegible]	[illegible]1	[illegible]	1 7[illegible] 104	[illegible]6 9[illegible]1	15	8[illegible]1 [illegible]6	80	683 4[illegible]2
Montgomery	[illegible]1 [illegible]1	0	1 [illegible] 60	20	28 [illegible]	57 8[illegible]	15	987 0[illegible]	8[illegible]	737 013
Morgan	76 [illegible]	[illegible]	[illegible] 02 [illegible]	[illegible]	619 [illegible]80	13 0[illegible]2	17	221 884	80	177 537
Moultrie	[illegible] 464	[illegible]	[illegible]	1	491 70	3 1[illegible]0	15	47 [illegible]0	77	36 8[illegible]
Ogle	134 8[illegible]	[illegible]	4 [illegible]80	4	1 13 801	4 2[illegible]0	24	103 176	9[illegible]	98 017
Peoria	11 [illegible]		[illegible] 10	[illegible]3	[illegible]01 [illegible]	[illegible] 909	14	40 [illegible]76	90	6 6[illegible]8
Perry	1[illegible] 0	10	1 [illegible]0	[illegible]	40 [illegible]7	17 [illegible]3	10	1 [illegible]6 0	7[illegible]	133 222
Piatt	9[illegible] 1[illegible]	22	180 [illegible]0	19	414 312	2 106	1[illegible]2	[illegible]6 8[illegible]	*8[illegible]	30 221
Pike	10[illegible] [illegible]	[illegible]	[illegible] 88[illegible]	4	781 8[illegible]	8[illegible] 88[illegible]	1[illegible]	1 28[illegible] 2[illegible]	77	991 957
Pope	[illegible] 6[illegible]	20	4[illegible] [illegible] 0	0	136 0 0	1 74[illegible]	[illegible]	9 619	[illegible]	7 214
Pulaski	8 [illegible]	1	170 [illegible]	5	[illegible]1 19	12 [illegible]	10	120 6[illegible]0	80	96 520
Putnam	[illegible] [illegible]	[illegible]	1 [illegible] 4 0 [illegible]		1 8[illegible]	2 4	14	3 1 6	90	2 822
Randolph	2[illegible]	3[illegible]	4 8 9	0	144 [illegible]	9[illegible] 66	1[illegible]	1 3[illegible] 900	8[illegible]	1 108 792
Richland	1[illegible] 30	10	1 3 96[illegible]	33	10	32 [illegible]19	14	1[illegible] 886	75	329 664
Rock Island	[illegible]	6	1 881 1 8	1	3[illegible] 0[illegible]	2 0	23	6 [illegible]10	100	6 210
Saline	[illegible]	[illegible]	[illegible]48 1	[illegible]	1 [illegible] 044	12 8[illegible]	9	116 0 1	73	84 746
Sangamon	17[illegible] [illegible]	[illegible]	[illegible] 8 [illegible]40	0	1 1 [illegible]08	14 [illegible]	17	4[illegible] 81[illegible]	70	174 870
Schuyler	[illegible] 1	8	1 [illegible] 88[illegible]	[illegible]	[illegible] [illegible]89	[illegible] 14[illegible]	12	[illegible] 704	7[illegible]	189 278
Scott	[illegible] [illegible]	[illegible]	88 680	4	189 86	12 01	15	18[illegible] [illegible]	80	144 2 4
Shelby	00 3[illegible]	8	[illegible] 8 8 848	2[illegible]	617 91[illegible]	2[illegible] 78	14	[illegible] 29[illegible]	7[illegible]	266 409
Stark	8[illegible] [illegible]4	3	[illegible] [illegible] 9[illegible]	[illegible]	6 [illegible] [illegible]0					
St. Clair	[illegible] [illegible]6	3	1 886 4 8	0	7[illegible] 37	161 747	1[illegible]	2 4 6 2[illegible]	8[illegible]	2 062 274
Stephenson	11[illegible] 091	49	[illegible] 4[illegible] [illegible]	19	1 04[illegible] [illegible]0	7 [illegible]44	23	1 3 12	90	1 [illegible]6 16[illegible]
Tazewell	9[illegible] 511	[illegible]	3 0[illegible] 841	3	69[illegible] [illegible]3	8 1[illegible]3	1[illegible]	1 [illegible] [illegible]	8[illegible]	03 9[illegible]0
Union	31 08[illegible]		9[illegible] 781	0	2[illegible] 4[illegible]	3[illegible] [illegible]49	*1[illegible] 2	49[illegible] 8[illegible]	*8[illegible]	409 884
Vermilion	1[illegible] 9[illegible]	30	4 [illegible] 310	19	8[illegible] [illegible]0	19 8[illegible]	18	[illegible] [illegible]0	8[illegible]	282 24
Wabash	1[illegible] [illegible]	31	[illegible] [illegible]	[illegible]	104 4[illegible]4	2[illegible] 506	16	3[illegible] 0 6	80	[illegible]01 644
Warren	1[illegible] 118	4[illegible]	6 [illegible]80 310	19	1 3[illegible] [illegible]2 9	2 [illegible]00	21	[illegible] 750	90	48 3[illegible]
Washington	11 064	30	331 9	[illegible]	116 1[illegible]	61 1[illegible]3	14	8[illegible]6 142	80	684 913
Wayne	[illegible] 8[illegible]4	[illegible]	1 [illegible] 8[illegible]	[illegible]	31[illegible] 48[illegible]	21 [illegible]10	17	362 [illegible]70	80	2[illegible]3 816
White	63 467	2[illegible]	1 [illegible] 6	[illegible]	8[illegible] 80[illegible]	43 046	12	516 552	80	413 241
Whiteside	114 064	40	4 [illegible]6[illegible] 50	[illegible]	1 003 [illegible]6[illegible]					
Will	11[illegible] [illegible] 340		5 8[illegible] 9[illegible]	26	1 [illegible] [illegible]9					
Williamson	28 621	22	[illegible] [illegible]78	[illegible]	1[illegible]7 4 2	40 [illegible]1	8	324 168	7[illegible]	243 126
Winnebago	84 [illegible]48	38	3 212 896	21	674 [illegible]3	1,[illegible]50	4	42 000	104	43 680
Woodford	1[illegible] 700	2[illegible]	2 817 400	[illegible]	606 40[illegible]	116	20	2, 320	90	2 088
Total	672 085	2[illegible]	2[illegible]0,560 810	2[illegible]	$56 0[illegible] 848	2 032,846	Av 14[illegible]	30,013 147	Av 8[illegible]	23 870,257

Estimated

Crop Statement—Continued.

Counties	SPRING WHEAT					OATS.				
	Acreage	Yield in bus pr.acre	Yield in bushels.	Price per bu Aug 1	Value of crop	Acreage	Yield in bus. pr.acre	Yield in bushels.	Price per bu Aug 1	Value of crop
Adams						8,340	30	250,200	42	$105,084
Alexander						468	27	12,636	30	3,790
Bond						12,229	34	415,786	16	66,525
Boone	636	13	8,268	85	$7,027	25,456	41	1,043,696	25	260,924
Brown	838	14	11,732	60	7,039	3,907	30	117,210	21	24,614
Bureau	15,152	14	212,128	82	173,944	32,373	43	1,391,179	20	278,235
Calhoun						720	40	28,800	30	8,640
Carroll	11,325	10	113,250	85	96,262	30,543	42	1,282,806	17	218,077
Cass	675	11	7,425	*77	5,717	8,835	37	326,895	16	52,303
Champaign	743	10	7,430	*77	5,721	28,143	43	1,210,106	15	181,515
Christian	604	10	6,040	65	3,926	11,551	46	531,346	16	85,015
Clark	4,090	*13	53,170	77	40,940	5,461	25	136,525	17	23,209
Clay						9,154	40	366,160	16	58,585
Clinton						19,542	37	723,054	15	108,458
Coles						10,313	42	433,146	16	69,303
Cook	11,848	20	236,960	93	220,372	36,750	45	1,653,750	27	446,512
Crawford						3,134	30	94,020	27	25,385
Cumberland						7,471	27	201,717	16	32,274
DeKalb	10,651	18	191,718	90	172,546	37,029	50	1,851,450	22	407,319
DeWitt	2,311	12	27,732	65	18,025	9,418	35	329,630	17	56,037
Douglas	530	11	5,830	67	3,906	9,084	33	299,772	16	47,963
DuPage	4,996	15	74,940	92	68,944	35,035	40	1,401,400	22	308,303
Edgar						4,078	28	114,184	16	18,269
Edwards						2,499	35	87,465	16	13,994
Effingham	1,144	*13	14,872	*77	11,451	13,396	35	468,860	15	70,329
Fayette						10,224	35	357,840	18	64,411
Ford	45	15	675	*77	519	12,226	37	452,362	*20	90,472
Franklin						8,956	33	295,548	20	59,109
Fulton	8,388	8	67,104	70	46,972	16,605	45	747,225	18	134,500
Gallatin						3,623	*37	134,051	15	20,107
Greene						3,903	33	128,799	25	32,199
Grundy	305	15	4,575	85	3,888	13,375	40	535,000	23	123,050
Hamilton						32,975	30	989,250	15	148,387
Hancock	1,208	12	14,496	65	9,422	19,567	37	723,979	16	115,836
Hardin						449	22	9,878	20	1,975
Henderson	3,509	16	56,144	70	39,300	8,284	43	354,062	17	60,190
Henry	7,250	13	94,250	80	75,400	23,896	45	1,075,320	18	193,557
Iroquois	241	9½	2,289	77	1,762	29,912	30	897,360	18	161,524
Jackson						4,342	32	138,944	20	27,788

Jasper							3 683	30	110 490	18	19,888
Jefferson							8 159	35	785 565	17	48 546
Jersey							1 160	30	34 800	25	8 700
JoDaviess	1 551	15	23 265	80	18 612		37 464	40	1 498 560	21	314 697
Johnson							3 505	20	70 100	20	14 020
Kane	843	14	11,802	95	11 211		22 390	47	1 052 330	23	242,035
Kankakee	351	16	5 616	80	4 492		39 427	45	1 774 215	30	532 264
Kendall	3,774	13	49 062	95	46 608		5 649	40	225 960	25	56 490
Knox	3 774	18	67 932	85	57 712		28 852	42	1 211 784	17	206 003
Lake	1 765	20	35 300	95	33 535		9 143	40	725 720	24	174,172
LaSalle	2 379	14	33 306	91	30 308		43 230	37	1 599 510	19	303 906
Lawrence							1 986	32	63 552	20	12 710
Lee	35 5 8	15	533 370	80	426 696		22 084	46	1 015 864	17	172 696
Livingston	1 752	15	26 280	80	21 024		47 606	35	1,491 210	17	253,505
Logan	1,493	12½	18 414	72	13 258		5 776	40	231 040	18	41 587
Macon	832	13½	11 232	65	7 300		17 677	42	742 434	16	118 789
Macoupin							11 190	35	391 650	20	78 330
Madison							14 014	32	448 448	25	112,112
Marion	2 977	12	24 924	70	17 446		7 287	50	364,350	20	72 870
Marshall	3 295	12	39 540	75	29 655		20 998	40	839 920	20	167 984
Mason	852	12	10 224	70	7 156		8 389	37	310 393	19	58 974
Massac	4 309	*13	56 017	*77	43 193		1 087	22	23 914	27	6,456
McDonough	10 028	9	90 252	65	58 665		17 046	37	630 702	25	157,675
McHenry	2 762	13	35 906	90	32 315		31 881	50	1 594 050	21	334,750
McLean	4 571	13½	61 708	90	55 537		51 003	45	2 295 135	17	390,172
Menard	580	10	5 800	65	3 776		4 655	42	187 110	17	32 008
Mercer	13 501	16	216 016	72	155 531		16 274	43	699,782	16	111 965
Monroe							8 350	35	292 250	30	87,675
Montgomery							9 002	35	315 070	18	56 712
Morgan	1 376	20	27 520	76	20 915		13 323	45	599 535	18	107,916
Moultrie	312	16	4 992	62	3 095		5 698	36	205 128	17	34 871
Ogle	40 427	15	404 270	85	343,629		63 377	40	2,535 080	20	507,016
Peoria	1 074	10	10 740	85	9 129		25 133	35	879 655	20	175 931
Perry							1 096	37	40 552	20	8,110
Piatt	526	12½	6 575	77	5 062		8 579	45	386 055	15	57 908
Pike							4 917	30	147 510	19	28 028
Pope							3 166	25	79 150	17	13,455
Pulaski							399	30	11,970	30	3 591
Putnam	2 230	16	35 680	80	544		5 509	46	253 414	20	50 682
Randolph							10 847	37	401 339	30	120 401
Richland	269	13	16 497	*77	12 702		3 032	45	136 440	15	20 466
Rock Island	5 247	*13	68 211	90	61,389		7 584	42	318 528	20	63 705
Saline							4 704	23	108 192	18	19 474
Sangamon	428	9	3 852	90	3 466		5 614	34	190 876	16	30 540
Schuyler	619	12½	20 237	60	12 142		6 103	33	201 399	17	34,237
Scott	550	*13	7 150	*77	5 505		403	40	16 120	22	3,546
Shelby	1 946	*13	25 298	*77	19 479		17 043	32	545 376	17	92 713
Stark	936	12	23 232	80	18 585		13 014	45	585 630	20	117 126
St Clair							20,229	40	809 160	30	242,748
Stephenson	3 161	10	121 610	75	91 207		41 658	35	1 458,030	20	291 606
Tazewell	357	10	13 570	75	10 177		6,049	33	199,617	19	37,927

Crop Statement—Continued.

Counties.	SPRING WHEAT					OATS				
	Acreage	Yield in bus pr.acre	Yield in bushels	Price per bu Aug 1	Value of crop	Acreage	Yield in bus pr.acre	Yield in bushels.	Price per bu Aug. 1	Value of crop.
Union						4 547	35	159.145	* 20	31,829
Vermilion	2,152	13	27,976	75	20,982	11.873	35	415.555	14	58 177
Wabash						2,120	33	69 960	21	14 691
Warren	2,249	16	35,984	80	28,787	23 014	45	1,035 630	16	165,700
Washington						7.558	35	264 530	18	47,615
Wayne						9 160	33	302,280	17	51,387
White						3,103	25	77.575	20	15.515
Whiteside	14 545	13	189 085	90	170.176	26 401	52	1,372,852	19	260,841
Will	3,276	15	49,140	95	46 683	70,700	40	2,828,000	23	650 440
Wil iamson						7.410	35	259,350	18	46.683
Winnebago	4,656	13	60 528	90	54,475	47,189	40	1.883,560	21	395 547
Woodford	10,074	15	151.110	90	135.999	31 102	38	1,181.876	22	260,012
Total	291,912	Av.13¼	3 870,251	Av. 82	$3 189,203	1,568,120	Av 39½	62,096 388	Av 20	$12,451,889

* Estimated

Crop Statement—Continued.

Counties	PASTURE			HAY				
	Acreage.	Value pr.acre	Total value	Acreage.	Yield in tons pr.acre	Yield in tons	Price pr ton Aug 1	Value of crop.
Adams	35,389	$3 75	$132,709	31,450	1½	47,175	$6 35	290,561
Alexander	315	2 50	787	439	1½	658	9 00	5 922
Bond	25,057	2 00	50,114	17 160	1	17,160	4 35	76 646
Boone	45,117	2 50	112,792	24,557	1¾	42 974	5 00	214,870
Brown	21,637	3 00	64 911	13 199	1½	19,798	4 50	89,091
Bureau	95,661	2 75	263,068	45,425	1¾	79,493	4 10	325,921
Calhoun	3,027	4 00	12,108	2,984	1¾	5,222	6 50	33,943
Carroll	72,684	5 00	363 420	40 290	2¼	90,652	4 00	362,608
Cass	31,158	3 25	101,263	4,754	2	9 508	6 00	57,048
Champaign	87,320	3 30	288,156	44,283	1¾	77,495	4 00	309,980
Christian	50,417	4 25	214,272	35 153	1¾	61,517	4 00	246,068
Clark	24,164	2 50	60 410	17,764	1½	26,64[illegible]	4 75	126,568
Clay	8,796	2 00	17 592	18,700	1¼	23,375	4 00	93, 00
Clinton	13 290	4 00	53,160	15,411	1½	23,116	4 00	92,464
Coles	100,330	2 60	260 858	24,049	2	48 098	4 00	192,392
Cook	46,026	3 00	138,078	59,339	1½	89,008	9 00	801,072
Crawford	23 860	2 00	47 720	11,656	1½	17,484	4 00	69,936
Cumberland	10,920	2 00	21,840	11,210	1½	14 946	3 65	54,552
DeKalb	94 605	2 50	236,512	70 676	2	141,352	4 75	671,422
DeWitt	36,665	2 50	91,665	13 068	2	26,136	4 25	111,078
Douglas	48,685	2 25	109,541	25,995	1½	38,992	4 25	165 716
DuPage	55 504	6 00	333 024	47,406	2½	118,515	5 50	651,832
Edgar	94 417	*2 65	250,205	17,332	1¾	30 331	3 25	98,575
Edwards	5,367	2 00	10 734	7,650	1½	11,475	4 75	54 506
Effingham	13 528	2 00	27 656	23 465	1½	35,197	4 00	140,788
Fayette	41,538	2 00	83,076	20,987	1	20 987	4 50	94,441
Ford	24 620	2 75	67,705	46 484	1½	69 726	*5 00	348,630
Franklin	6 370	2 00	12 740	5,218	1	5 218	6 50	33,917
Fulton	35 245	2 50	88 112	30,561	2¼	68 762	4 35	299,114
Gallatin	4,607	2 25	10,366	2 844	1½	4,266	5 00	21,330
Greene	63,406	3 85	263,963	21,123	2½	52,807	6 00	316,842
Grundy	71,119	3 00	213 357	45 550	1½	68,325	4 00	273,300
Hamilton	2,428	2 00	4,856	2,092	1½	3 138	6 00	18,828
Hancock	41,653	2 00	83 306	37,168	1½	55,752	4 00	223,008
Hardin	3,080	4 00	12,320	14,112	1	14,112	8 00	112,896
Henderson	26 304	4 75	124,944	12,341	2	24,682	4 35	107 366
Henry	81 920	4 50	368 640	37,604	2	75,388	4 25	320,399
Iroquois	80,519	2 00	161 038	39,189	2 1-5	86,21[illegible]	4 00	344,860
Jackson	6 671	2 00	13,342	6,486	1½	9,729	6 65	64,607
Jasper	24,975	2 00	49 950	16 595	1¾	29 042	4 30	124 880
Jefferson	18 924	3 65	69,073	10,566	1½	15,849	5 00	79,245
Jersey	39,710	4 50	178 830	12 550	2½	31,375	6 65	208 643
Johnson	58 710	3 10	182 001	37,677	1¾	65,944	5 00	329,670
Kane	2 231	2 00	4,462	5,974	1½	8,961	6 65	59,590
Kankakee	80,997	3 10	250,967	38,781	1¾	67,866	5 00	339,330
Kendall	68,882	4 00	275,528	57,040	1½	85,560	4 00	342,240
Knox	42,742	4 35	185,928	19 356	2	39,712	4 00	1 8 848
Lake	135 853	3 25	441,522	42,385	2	84,770	4 00	339 080
LaSalle	62,533	2 00	125,066	39 471	1¾	69 072	4 35	300 463
Lawrence	13,718	3 00	41 154	76,232	2	152,464	4 60	701,334
Lee	9 096	2 50	22 740	7 925	1½	11,887	4 75	56 463
Livingston	49 920	3 25	162 240	37,520	2¼	84,420	4 00	337,680
Logan	71,113	4 50	320 008	59,271	1¾	103,725	4 00	414,900
Macon	50,366	3 25	163 690	13,188	2	26,376	6 00	158,256
Macoupin	48,700	2 85	138,795	18,803	2¼	42,307	5 65	239,034
Madison	54,321	2 00	108,642	38 018	1¾	66,530	5 25	349,282
Marion	45,910	4 35	199,708	19 629	1¼	24,536	7 00	171,752
Marshall	29 011	4 50	130 549	22,726	1 1-5	27,271	4 00	109 084
Mason	31,528	3 00	94,584	16,545	1¾	28,953	4 65	134,631
Massac	7,295	4 00	29,180	3,195	1½	4,792	6 65	31 866
McDonough	1,638	*2 00	3,276	2,623	1½	3 934	10 00	39,340
McHenry	51,873	3 00	155 619	28,377	2	56,754	3 50	198,639
McLean	104,089	2 25	234,200	45,755	2	91,510	5 50	503,305
Menard	126,860	2 85	361,551	66 311	2	132 622	4 00	530,488
Mercer	32,844	3 30	108,385	6,890	1¾	12,056	4 50	54 252
Monroe	62 571	2 90	181,455	24 294	2	48,588	3 25	157,911
Montgomery	9,245	4 00	36,980	3 819	1½	5,728	7 50	42,960
Morgan	49,678	2 00	99 356	33 219	1½	49,828	4 50	224,236
Moultrie	76 026	3 10	235,681	23,298	2	46,596	5 00	232,980
[illegible]gle	32 559	3 00	97,677	14,796	2¼	33,291	3 00	99,873
[illegible]eoria	18,977	2 75	52,187	44,718	2	89,436	4 00	447,180
[illegible]erry	33 363	3 50	116,767	26,909	2	53,818	4 00	215,272
	5,062	2 00	10,124	1,860	1½	2,790	6 25	17,437

Crop Statement—Continued.

Counties	PASTURE			HAY.				
	Acreage.	Value pr.acre	Total value.	Acreage.	Yield in tons pr.acre	Yield in tons.	Price pr. ton Aug. 1	Value of crop.
Piatt	37,831	$2 60	$98,361	9,094	1½	13,543	$4 00	54,172
Pike	37,045	3 35	124,101	20,300	1¾	35,525	6 50	230,912
Pope	5,227	2 50	13,067	3,163	1½	4,744	12 00	56,928
Pulaski	616	*2 00	1,232	1,274	1¾	2,228	11 00	24,508
Putnam	20,605	2 50	51,512	7,736	2¼	17,406	4 10	71,364
Randolph	5,082	2 50	12,705	6,651	2	13,302	8 00	106,416
Richland	10,919	2 00	21,838	12,370	1¼	15,462	4 25	65,713
Rock Island	58,670	2 80	164,276	11,907	1½	17,860	4 50	80,370
Saline	2,145	3 00	6,435	3,281	1½	4,921	7 00	34,447
Sangamon	96,126	2 85	273,959	21,817	1¾	38,179	4 50	171,805
Schuyler	17,653	3 00	52,959	18,242	1¾	31,922	4 00	127,688
Scott	20,790	4 00	83,160	4,200	2¼	9,450	5 50	51,975
Shelby	51,342	2 00	102,684	26,767	1¾	46,843	4 00	187,372
Stark	20,958	4 35	91,167	13,076	1¾	22,883	5 00	114,415
St. Clair	15,975	5 50	87,862	13,404	1½	20,106	10 25	206,086
Stephenson	52,102	3 75	195,382	42,062	2½	105,155	5 00	525,775
Tazewell	18,427	3 00	55,281	16,018	1½	24,027	5 35	128,544
Union	5,374	4 00	21,496	6,575	1	6,575	*5 00	32,875
Vermilion	82,741	2 00	165,482	27,845	1½	41,767	4 35	181,686
Wabash	10,231	3 00	30,693	6,962	1½	10,443	5 00	52,215
Warren	60,527	3 10	187,634	23,230	2	46,460	4 15	192,809
Washington	10,973	2 75	30,176	2,159	1½	3,238	7 50	24,285
Wayne	48,014	2 25	108,031	19,512	1½	29,268	4 00	117,072
White	10,200	2 15	21,930	9,918	1½	14,877	5 50	81,823
Whiteside	73,978	5 00	369,890	54,930	2¼	123,592	3 75	463,470
Will	39,063	3 00	117,189	74,657	1½	111,985	4 35	483,134
Williamson	10,346	2 00	20,692	4,105	2¼	9,439	6 35	59,937
Winnebago	37,324	2 10	78,380	22,860	1¾	40,005	4 10	164,020
Woodford	33,146	3 00	99,438	23,134	1¾	40,483	5 60	226,704
Total	3,983,459	$3 10	$12,321,647	2,368,854	Av. 1 4-5	4,255,471	Av 4 70	19,994,341

*Estimated

Crop Statement—Continued.

Counties	ORCHARDS.			IRISH POTATOES				
	Acreage.	Val of prod'ct pr.acre	Total value of product	Acreage.	Yield pr.acre in bus.	Crop in bushels	Price per bu. Dec. 20.	Value of crop
Adams	7,043	$10 00	$70,430	1,741	45	79,347	60	$47,608
Alexander	480	6 50	2 795	†149	*64	9,536	50	4,768
Bond	2,388	4 00	9,552	....	....	....	....	....
Boone	1,813	17 50	31,727	402	54	21,668	55	11,917
Brown	1,327	30 00	39,810	243	68	16,577	45	7,460
Bureau	5 014	18 50	92,759	†1,366	*64	87,424	55	48,083
Calhoun	2,645	*7 00	18,515	353	48	17,101	50	8 550
Carroll	2,978	30 00	89,340	776	51	40,331	50	20,165
Cass	1,203	30 00	39,090	255	67	17,267	55	9,451
Champaign	5,433	5 50	29,881	1,836	76	141,128	40	56,497
Christian	4,612	11 25	51,885	745	87	64,411	45	28,985
Clark	2,269	*11 00	24,959	251	67	16,847	35	5,896
Clay	1,572	30 00	47 160	203	87	17,690	35	6,191
Clinton	1,938	5 00	9,690	856	66	56 836	45	25,576
Coles	6,706	3 50	23 471	580	73	42,566	45	19,155
Cook	1 573	30 00	47,190	11,699	52	613,765	50	306,882
Crawford	1,988	18 50	36,778	306	44	13,763	55	7,570
Cumberland	1,154	25 00	28,850	278	40	11,138	50	5,569
DeKalb	4,102	25 00	102,550	1,503	52	79,276	55	43,602
DeWitt	2 167	7 00	15 169	308	89	27,629	35	9,670
Douglas	1,989	25 00	49 725	203	75	15,391	45	6,926
DuPage	4 224	6 00	25,344	3,020	64	194,278	50	97,139
Edgar	3,712	27 50	102,080	390	83	32,378	50	16,189
Edwards	1,438	*7 00	10,066	57	187	10,699	40	4,279
Effingham	1,891	5 50	10,400	515	46	24,181	40	9,672
Fayette	958	5 00	4,790	342	56	19,269	40	7,707
Ford	1,806	5 00	9,030	390	81	31,794	45	14,307
Franklin	1,896	25 00	47,400	†200	*64	12,800	40	5,120
Fulton	5,198	*13 25	68,873	....	....	....	....	....
Gallatin	1,458	20 00	29 160	140	44	6,250	40	2,500
Greene	4,000	14 00	56,000	399	53	21,242	65	13,807
Grundy	1,988	6 00	11 928	434	51	22,283	55	12,256
Hamilton	2,393	5 00	11 965	204	67	13,716	40	5,486
Hancock	1,729	22 50	38,902	1,203	70	84,729	40	33,891
Hardin	1,258	*5 50	6,919	†1,748	*64	111,872	40	44,749
Henderson	1,622	27 50	44,605	131	93	12,190	35	4 266
Henry	4,219	*6 25	26,369	1,233	68	83,883	45	37,747
Iroquois	4,174	15 00	62,610	1,158	64	74,585	55	41 022
Jackson	3,492	2 00	6,984	335	55	18,441	50	9,220
Jasper	1,837	5 00	9,185	273	52	14,360	50	7,180
Jefferson	2,854	8 25	23,545	281	47	13,241	35	4,634
Jersey	2,553	*5 50	14,041	†249	*64	15,936	55	8,765
JoDaviess	2 117	14 00	29 638	1,725	45	79,056	40	31,622
Johnson	2 350	25 00	58,750	114	37	4,323	50	2 161
Kane	3,174	23 25	73,795	1,116	61	68,663	45	30,898
Kankakee	2,435	25 00	60,875	791	63	49,988	50	24,994
Kendall	2,923	6 50	19,000	636	53	34,302	50	17,151
Knox	6,199	25 00	154,975	1,315	60	79,177	50	39,588
Lake	3,631	4 50	16,340	1,267	47	60,189	60	36,113
LaSalle	6,195	3 50	21,683	2,607	54	149,901	55	82 445
Lawrence	2,054	6 00	12,324	296	58	17,462	50	8,731
Lee	3,688	17 50	64,540	....	....	....	....	....
Livingston	4,289	15 00	64,335	1,244	55	69,288	45	31,180
Logan	2,724	*11 00	29,964	906	81	74,264	50	37,132
Macon	3,700	18 25	67,525	872	84	73,607	50	36,803
Macoupin	4,144	5 25	22,792	478	47	22,675	60	13,605
Madison	8,104	9 00	72,936	3,709	92	342,261	40	136,904
Marion	5,957	10 00	59,570	314	72	22,667	42	9,520
Marshall	2,723	*5 50	14,976	†460	*64	29,440	50	14,720
Mason	1,699	*12 50	21,237	....	....	....	....	....
Massac	851	25 00	21,275	329	38	12,818	50	6,409
McDonough	3,375	10 00	33,750	†500	*64	32,000	50	16,000
McHenry	4,204	25 00	105,100	†1,587	*64	101,568	55	55,862
McLean	20 576	25 00	514,400	1,503	72	112,891	50	56,445
Monard	1,649	6 50	10,660	303	58	17,620	45	7,929
Mercer	3,052	6 00	18,312	733	89	65 379	45	29,420
Monroe	1,848	10 00	18,480	943	67	63,751	35	22,313
Montgomery	4, 57	*8 25	37,595	451	61	27,912	40	11,165
Morgan	3,600	20 00	72,000	....	....	....	....	....
Moultrie	1,860	20 00	37,200	301	64	19,435	45	8,746
Ogle	968	12 50	12,075	1,211	65	78 918	45	35,513
Peoria	2,459	*8 25	20,287	1,413	61	86,851	45	39,083
Perry	1,588	*5 00	7,940	147	85	12,636	45	5,686

Crop Statement—Continued.

Counties	ORCHARDS			IRISH POTATOES.				
	Acreage.	Val of prod'ct pr.acre	Total value of product	Acreage.	Yield pr.acre in bus	Crop in bushels	Price per bu. Dec 20.	Value of crop
Piatt	2,325	* $10 50	$24,417	385	86	33,280	30	$ 9,984
Pike	5,141	*9 50	48,830	511	67	34 688	50	17,344
Pope	2 058	8 00	16,464	1,513	33	50,487	55	27,768
Pulaski	1,927	16 50	31,795	300	40	12,000	50	6 000
Putnam	1,427	3 50	4,994	229	61	14,155	55	7,785
Randolph	2 161	14 00	30,254	663	84	56 215	40	22,486
Richland	2,300	*11 00	25,300	311	64	19,956	45	8,980
Rock Island	2,815	12 50	35,187	1,869	76	142,989	35	50 046
Saline	1,632	5 00	8,160	77	27	2 150	40	860
Sangamon	4,258	17 00	72,386	1,266	64	82,231	40	32,892
Schuyler	1,836	16 25	29,835	245	59	14,595	55	8,027
Scott	1 011	5 00	5,055	283	49	14,149	50	7 074
Shelby	3,367	*9 50	31 986	801	52	42,212	60	25 327
Stark	1,202	25 00	30,050	308	67	20,774	45	9 348
St Clair	5,697	7 50	42,727	2 636	93	246 443	40	98 577
Stephenson	3,17	15 00	47,595	1,255	59	74,757	40	29,902
Tazewell	1,569	15 00	23,535	852	58	49,770	50	24 885
Union	†4,611	*8 25	38,041	276	51	14 288	50	7 144
Vermilion	2 887	10 00	28,870	766	92	71,191	50	35,595
Wabash	1,666	3 50	5 831	108	49	5 384	55	2 961
Warren	2 892	15 00	43,380	525	92	48,499	50	24,249
Washington	2,174	15 00	32,610	436	76	33 269	40	13,307
Wayne	4,518	20 00	90 360	448	44	19,754	45	8,889
White	1,985	13 00	5,955	280	54	15,153	55	8,334
Whiteside.	3,836	30 00	115,080	1,396	69	96,806	45	43 563
Will	1,629	5 00	8,145	3,963	37	148,675	50	74 037
Williamson	2,817	5 00	14,085	124	53	6 653	45	2,994
Winnebago	1,900	14 25	27 075	1,127	63	71,490	50	35,745
Woodford	2,600	3 00	7,800	680	55	37,780	50	18,890
Total	412,140	$10 14	$4,181,662	87,719	62	5,496,053	46	$2,571,588

† Acreage 1877
* Estimated

Acres in Cultivation in 1878, *etc.*

Counties	Corn	Meadow	Winter wheat	Spring wheat	Oats	Pasture	Orchard
Adams	109,269	31,450	66 805		8,340	35,389	7,043
Alexander	14 113	439	7, 356		468	315	430
Bond	38 340	17 110	25 779		12 229	25 056	2 388
Boone	37 689	24 557	65	636	25 456	45,117	1,813
Brown	33 940	13 199	15,940	838	3 907	21,637	1 327
Bureau	163 468	45 425		15 152	32 353	95 661	5 0 4
Calhoun	17 373	2 984	15 047		720	3,027	2,645
Carroll	76 619	40,290	3 372	11 925	30 543	72 684	2,978
Cass	76 721	4 754	16 322	675	8 835	31,158	1,203
Champaign	233, 371	44 283	9 040	743	28 143	87, 320	5 433
Christian	161 058	35 153	7 395	604	11 551	50,417	4 612
Clark	46,581	17 704	37 728	4,090	5 461	24, 164	2,289
Clay	50 837	18 700	24 401		9 154	8,796	1,572
Clinton	66 010	15 411	77 062		19,542	13 290	1 938
Coles	102 616	24 049	17,038		10, 313	100 330	6 706
Cook	37 172	53, 339		11 848	36,750	46 026	1,573
Crawford	59 228	11 656	26 246		3 134	23,860	1,988
Cumberland	34 881	11 210	11 310		7 471	10 920	1,154
DeKalb	121 797	70 676		10 651	37,029	94 605	4 102
DeWitt	97 750	13 008	1 386	2 311	9 418	36 666	2,167
Douglas	99 009	25 995	2,122	530	9 084	48 085	1 989
DuPage	48 297	47 406		4,996	35 035	55 504	4 224
Edgar	94 183	17 333	13 326		4 078	94 417	3,712
Edwards	22 101	7 650	18 640		2 439	5 367	1,438
Effingham	46 190	23 405	29 668	1,144	13 396	13,828	1 891
Fayette	49 151	20 987	12 421		10 224	41 538	958
Ford	157 932	46 484	213	45	12 226	24 620	1 806
Franklin	5 158	5 218	30 439		8,956	6 370	1 896
Fulton	145 010	30 561	17 215	8,388	16 605	35,245	5 198
Gallatin	23 370	2 844	16 980		3 623	4 607	1 458
Greene	78 135	21 123	54,111		3 903	68 406	4 000
Grundy	106 007	45 550		305	13, 375	71 119	1,988
Hamilton	154 914	5 092	5 165		12 975	2 428	2 393
Hancock	158 15	37 148	10 221	1 208	19 567	41 653	1,729
Hardin	11 815	14 112	4 943		449	3 080	1 258
Henderson	92 154	12 441	3,625	3 509	8 234	26 304	1,622
Henry	151 024	7 694		7,450	23 896	81 920	4 219
Iroquois	315 175	39 198	1 986	241	29 912	80,519	4 174
Jackson	9 705	6 486	34 334		4 342	6 071	3 492
Jasper	31 778	16 595	17 265		3,683	24 975	1,837
Jefferson	36 957	10 560	44 325		8 159	18,924	2 854
Jersey	28 844	12 530	66 405		1 160	39,740	2,553
Jo Daviess	81 558	37 677	2 861	1 551	37 464	58 710	2 117
Johnson	28 184	5 97	18 831		3 505	2,231	2,350
Kane	9 581	38 781	730	843	22,390	80 957	3 174
Kankakee	169 783	57 040		351	39 427	68 882	2,435
Kendall	39 579	19 356		3 774	5 649	42 742	2 923
Knox	171 194	42 585	2 698	3 774	28,852	135 853	6,199
Lake	22 687	39 471	647	1 765	18 143	62 573	3 631
LaSalle	225 781	46 232	2 974	2 379	43,230	13 718	6 196
Lawrence	23 485	7 925	34 573		1 986	9 096	2 054
Lee	108 135	57 530		35 558	22 084	49 920	3 688
Livingston	300 710	59 271		1 752	42,608	71 113	4 289
Logan	153 348	13 188	11 495	1 493	5 776	50 366	2 724
Macon	166 639	18 803	7 408	832	17,677	48 700	3,700
Macoupin	100 992	38 018	91 570		11 190	54, 321	4 144
Madison	91 836	19 639	116 934		14 014	45,910	8 104
Marion	90 106	22 726	10 162	2 077	7 28	29 011	5 957
Marshall	114 444	16 545	96	3 295	21 928	31 528	2 723
Mason	61 151	3 195	7 898	852	8, 389	7 295	1 699
Massac	14 675	2 623	15 389	4 309	1 087	1,638	851
McDonough	112 199	28 377	3 297	10 028	17 046	51 873	3, 375
McHenry	56 191	45 755	1 555	2 762	31 881	104,089	4,204
McLean	336 834	66 311	6,451	4 571	51 003	126,860	20 576
Menard	70,030	6 890	6 114	580	4 655	32 844	1,640
Mercer	103 994	24 294	2,808	13 501	16,274	62 571	3 052
Monroe	26 115	3 819	56 951		8 350	9 245	1,848
Montgomery	71,915	33 219	77 805		9 002	49 678	4,557
Morgan	76 923	23 298	13 052	1 376	12 423	76,026	3,600
Moultrie	97 494	14 796	3,160	312	5 698	32 559	1,560
Ogle	134 868	44 718	4 299	40 427	63 377	18 977	966
Peoria	112,969	26 909	2 909	1,074	25 135	33 362	2,459
Perry	13 505	1 860	17,763		1 096	5 062	1 588
Piatt	99,125	9,029	2,106	526	8,579	37,831	2,325

Acres in Cultivation in 1878, *etc.*—Continued.

Counties.	Corn.	Meadow.	Winter wheat.	Spring wheat.	Oats	Pasture	Orchard.
Pike	105 093	20,300	85,882	...	4,917	37,045	5,141
Pope	22,675	3,163	1,749	....	3,166	5,227	2,058
Pulaski	8,125	1,274	12,065	...	399	616	1,927
Putnam	31,070	7,736	224	2,230	5,509	20,605	1,427
Randolph	22,255	6,651	89,066	....	10,847	5,082	2,161
Richland	17,396	12,370	32,349	1,269	3,032	10,919	2,300
Rock Island	52,253	11,907	270	5,247	7,584	58,670	2,815
Saline	21,927	3,281	12,899	...	4,704	2,145	1,632
Sangamon	170 524	21,817	14,695	428	5,614	96,126	4,258
Schuyler	55,371	18,242	22,142	1,619	6,103	17,653	1,536
Scott	22,534	4,200	12,017	550	403	20 790	1,011
Shelby	100,316	26,767	25,378	1,946	17 043	51,342	3,367
Stark	83,544	13,076	..	1,936	13,014	20,958	1,202
St Clair	57,226	13,404	161,747		20,229	15,975	5,697
Stephenson	112,091	42,062	7,544	12,161	41,658	52,102	3,173
Tazewell	97,511	16,018	8,153	1,357	6,049	18,427	1,569
Union	31,087	6,575	32,249	...	4,547	5,374	4,611
Vermilion	154,977	27,845	19,585	2,152	11 813	82,741	2,887
Wabash	21,216	6 962	23,566		2,120	10,231	1,666
Warren	155,118	23,230	2,500	2,249	23,014	60,527	* 2,802
Washington	11,064	2,159	61,153		7,558	10,973	2,174
Wayne	55,854	19,512	21,310		9,160	48,014	4,518
White	63,467	9,918	43,046		3 103	10 200	1,985
Whiteside	114,064	54,930	...	14,545	26 401	73,978	3,836
Will	147,323	74,057		3 276	70,700	39,063	1,629
Williamson	28 624	4,195	40,521		7,410	10 346	2,817
Winnebago	84 548	22,860	1,750	4,656	47 089	37 324	1,900
Woodford	131,700	23,134	116	10,074	31,102	33,146	2,600
Total	8,672,088	2,368,854	2,032,843	291,912	1,568,120	3,983,459	412,140

* Assessor's returns for 1877

Table showing Acreage Farm Crops in 1878 *compared with* 1877, *and Yield compared with an Average.*

Counties	Broom Corn.		Rye		Barley		Flax		Cotton.		Tobacco		Castor Beans		Irish Potatoes		Sweet Potatoes.		Sorghum		Buckwheat.		Turnip &other root crops	Beans.	
	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Acreage compared with 1877	Average yield
Adams	100	75	100	100	...	.	.	.		...	.	..	.	.	100	83	95	86	100	65	95	95	100	...	85
Alexander		100	110		.	.	.	...		110	.	90			85	95	80	90	80	90	.	....	100	100	100
Bond	80			100	.		.							.	103	95	100	85	100	73	.	..	75	..	75
Boone	90	95	100	100	90	95	100	100						.	100	95		90	.	...	85	90	75	90	..
Brown		50	100	90	.		.		.	.		90	.		100	95	100	65	.	73	90	75	100	...	
Bureau	.		100	105	100	100	..					..			100	100		100	100	90	105	95	100	100	105
Calhoun	..	...		100	..	.	.				100	..		.	100	75	100	.		100	..	..	.....	...	....
Carroll	.	.	112	110	95	95	.	.			..	.			100	100	100	100	...	..	70	95	100	100	100
Cass			100	100	..	.	.				.	.		.	100	95	100	100		115	.	..	...	....	....
Champaign	90	100	105	95	..		118	110				.		.	95	90	100	95	100	100	115	100	100	100	100
Christian		80	105	95	...	100	110	95			100	100	..	.	105	100	100	90	100	80	.	80	. ...	100	70
Clark	55	65	105	105	..	.	80				50	100		.	85	80	100	95	75	70	105	100	85	105	90
Clay	.	25	100	100	..	100	115	95			.	100	.		100	105	100	95	105	80	100	.	70	100	95
Clinton		90	100	100	.	.	80	100			105	102	100	100	107	120	100	90	100	100	100	90	100	100	105
Coles	100	100	100	95	.	.	..				..	100			100	90	103	100	100	40	.	...	...	110	100
Cook	..	...	105	110	..		100	90			.		.		87	85	100	90	...	..	85	100	90	. ..	100
Crawford		80	100	100	.		.	...	.		95	100	..		100	100	100	95	90	85	125	100	100	80	110
Cumberland	55	70	100	1[illegible]			100		.	.	100	90	.		105	100	100	90	85	80	80	75	100	100	65
DeKalb	100	..	90	105	95	100	105	100	..			..			100	108			..	..	90	100	100	100	100
DeWitt	.	.	95	85	.	65	..		.			.			95	90	100	100	100	95	120	105	100	75	80
Douglas	95	85	110	105	100	100		85	..		105	95	100		110	85	97	100	100	80	110	100	100	100	100
DuPage	..		100	125	..	.	100		.			..		..	80	90		.		..	100	100	100	105	100
Edgar	..	100	100	100		.	.	.	.		..	.	.		97	100	95	95	100	60	100	75	100	95	...
Edwards	..		100		.		..	.	.			100		.	100	90	100	100	95	100		..	...	.	
Effingham	65	75	150	108	.		.	.			100	100	.	....	103	90	90	80	85	65	65	90	75	100	100
Fayette		75	133	100	.	.		.			100	..	.	.	100	90	100	85	90	75	65	90	95	100	85
Ford	80	90	150	95	.	..	100	95					..		100	100		100	100	.			100	.	90
Franklin	...	110	100			.	.	125	.	110	65	95	..	85	100	95	100	95	95	100	100	110	80	100	95
Fulton	...		195	100		..	...		.	.	.	.	.		100	95	100	100	100	100	95	100	.	100	..
Gallatin	.	.	100	80	.		.	.	.	...	20	80	.	90	100	100	100	100	100	90	...	....	90	100	...

Crop Statement—Continued.

Counties	Broom Corn		Rye.		Barley		Flax		Cotton.		Tobacco		Castor Beans		Irish Potatoes.		Sweet Potatoes		Sorghum		Buckwheat.		Turnip &other root crops.	Beans.	
	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Average yield	Acreage compared with 1877	Acreage compared with 1877	Average yield
Green			110									75		75	103	90	105	95		75	80		90		
Grundy			100	60	100	75					100				90	75	100	75			105	90	110	100	
Hamilton				160							40	100			108	100	105	70	103	90			100	100	100
Hancock	108	82	100	90		100					100	100			108	90	100	90	100	90	110	90	105	100	100
Hardin				100							100	90			100	85	100	95	100	100			100		90
Henderson		100	90	85											103	90	100	100	105	100	80	80	100		
Henry	95	95	100	100	100	100							100		100	90	95	90		100	95	95	110	105	90
Iroquois	100	100	200	70			115	100							100	100	100	100	100	100	120	125	100	100	85
Jackson			100	100					85	100		100			100	95	100	100	90	100	100				
Jasper	50	65	100	100			100	90			100	75			100	90	100	85	75	72	90	95	100	75	75
Jefferson	100	100	105	100			100	100		80	100	88	100	80	100	90	95	90	100	80	90	90	100	100	80
Jersey												85			103	70	100	100	100	60	100	100	100		100
JoDaviess	100	100	108	108	100	100	100	100				100			100	100		100			100	100	100	100	100
Johnson			120								50	100			95	100	100	100	100	100	100	100	100	110	100
Kane		95	100	100	100	100	100	90							95	80	100	90			90	90	65	100	100
Kankakee	100	100	95	107	100		100	100				25			90	60		100	100	80	120	100	75		65
Kendall			90	100	100	85									95	88	75	70			110	100	100	90	100
Knox	100	100	100	100											100	90	100	100	110	95	80	95	95		
Lake		90	195	103			107	90							100	90					100	100	100	100	100
LaSalle			100	200			100								100	90	100	100	90	90	150	100	100		100
Lawrence		95	120									90			100	100	90	105		100	100	100	100	95	100
Lee			100	107	95	100									95	80	100	100		140	103	90	100	100	
Livingston			110	85			160								90	100	100	90	100	100	115	95	100		100
Logan			103	100											105	95	100	100					100		100
Macon		100	110	86		100	100	100				100			103	100	90	95	100	90	100	85	100		
Macoupin			95												100	95	100	75					100		100
Madison		75		100		90						95			107	100	100	95	100	90			75		90
Marion		100	115	100		110		75				90		85	100	125	100	125	90	100	100	100	100	75	100
Marshall			90	95											104	85		100	100	90			80	120	100
Mason		110	100	95								100			100	105	100	100		100	105	105	120		

Massac		75		100					95		75	85			100	95	83	100	100	95			105	100	100
McDonough	110	100	105	100	100	90									100	90	100	100	133	90	100	95	85	100	100
McHenry			100	100	100	105	107	82							90	82	100		100		62	80	90	80	95
McLean		95	100	100											105	100	90	95		95	100	100	100		
Menard		87	100	95											100	95	100	100		100	135	100	100		..
Mercer	95	95	100	80	100	100									100	100	100		100	100	90	100	100	100	
Monroe																95		90		80			50	100	60
Montgomery	25		11	90	100	100									100	90	100	85			105	100		100	
Morgan			100	100											100	90	87	85					100	100	
Moultrie	100	90	138	95	110	110	100	100			90	100			100	90	100	90	100	95	100	95	100	100	95
Ogle			100	100	70	95		100							100	95	100	100		90	133	100	100		95
Peoria			115	103	100	100									100	90	100	85		75	110	100	100	100	90
Perry			100	95							100	100			100	103	100	100	100				100	100	
Piatt	95	90	100	90			80	90			100	90			95	100	100	100	95	80	100	90			90
Pike			90	100								100			103	100	100	100	100	60	110	100	100		100
Pope		90	100	100						60	100	80			100	75	75	90	60	80			80	80	70
Pulaski											95	90			100	100	100	100	95	100			85	90	95
Putnam			110	103	80	100									90	90	100	85	95	90	105	95	100		
Randolph	100	90	100	100	100						100	100	100		100	100	95	100	100	95			100	100	100
Richland		90	100	100			110	95							60	95	90	95	95	82	95	100	100	100	
Rock Island	90	100	108	106	90	105									100	85	100	100	100	95	75	95	85	100	100
Saline		100	100	100					100	100	75	83			120	100	105	100	80	100	100	100	100	100	90
Sangamon	10	87	108	104		100					100	90			100	105	95	95	100	85	100	100	100	105	87
Schuyler	80	85	100	80			100	100			90				100	100	100	95	100	82	110	100	100	100	100
Scott			80	100											95	90	100	70		90	90	100	100	100	
Shelby			105	100											100	80	100	75	75	75	75	50	85	90	100
Stark	100	95	100	100	95	95	100								100	90	100	100	100	100	95	95		100	100
St Clair	100	100	100										75	100	115	100	100	100	95	100	90	100	85	100	90
Stephenson	100	100	106	105	70	100	110	100			90	100			100	100	100	100	100	100	95	100	100	100	100
Tazewell		100	105	95	100	90									100	100	100	100	100	100	105	100	100	95	
Union			100						50		50	100			85	100	85	90	75						
Vermilion		80	105	110			100	100				100	100	100	100	107	95	100	100	100	105	100	95	90	
Wabash	75	100	100	100							100	75			93	90	100	95	100	90	95	95	75		
Warren	100	100	95	110											105	95	100	103	95	100	95	95	100	105	
Washington		100	100	100								100			105	100	100	85	100	100	100	100	100	100	90
Wayne	100	100	100	100							100	95	100	100	100	100	100	95	105	93	90	95	95	105	85
White												80			75	75	100	85	100	85	100	75	85	85	
Whiteside			100	100	95	100						100			95	90	100	75	100		100	80	100	100	100
Will			93	100			100	100							100	85	100	90	150		75	75	100	100	75
Williamson	100	100	100	100					90	100	80	80	75	75	100	72	100	100	100	85	100	100	100	100	100
Winnebago			90	85	75	100									90	90					75	100	70	100	
Woodford			100	90											100	85					200	100			

Value Principal Crops in Illinois in 1878.

Counties	Corn	Hay.	Winter Wheat	Spring Wheat	Oats	Pasture	Orchard	Total Value.
Adams	$ 688,395	$299,561	$919,004		$105,084	$132,709	$ 70,430	$2,216,083
Alexander	91,472	5,922	49,653		3,790	787	2,795	154,419
Bond	118,091	76,646	329,071		66,525	50,114	9,552	650,899
Boone	315,080	214,870	11,844	$ 7,027	260,924	112,762	31,727	954,264
Brown	186,670	89,091	193,830	7,039	24,614	94,011	39,810	605,965
Bureau	1,196,778	327,921		173,944	278,245	263,068	92,759	2,320,705
Calhoun	130,297	33,943	204,639		8,640	12,108	18,515	408,142
Carroll	612,952	362,608	63,056	96,262	218,077	93,420	89,340	1,805,715
Cass	506,759	57,048	221,979	5,717	52,303	101,263	39,090	983,759
Champaign	1,152,853	300,980	111,372	5,721	181,515	288,156	29,881	2,079,478
Christian	913,190	246,068	84,894	3,926	85,015	214,272	51,885	1,599,250
Clark	291,131	126,768	367,848	40,940	23,200	60,410	24,959	935,065
Clay	178,438	93,500	292,812		58,585	17,592	47,160	688,087
Clinton	396,060	92,464	961,743		108,458	53,160	9,690	1,621,565
Coles	496,661	192,392	245,347		69,303	261,858	23,471	1,288,032
Cook	308,746	801,072		220,372	446,512	138,078	47,190	2,021,970
Crawford	186,333	59,936	272,958		25,385	47,720	96,778	639,110
Cumberland	150,804	54,572	118,755		32,274	21,840	29,850	387,075
DeKalb	1,064,506	671,422		172,546	407,419	296,512	162,550	2,654,855
DeWitt	469,200	111,078	16,632	18,025	56,047	91,065	15,169	777,906
Douglas	495,045	165,716	24,827	1,906	47,963	109,541	49,725	896,723
DuPage	457,047	651,832		68,944	308,303	333,024	25,344	1,845,094
Edgar	731,704	98,575	149,017		18,209	230,205	102,080	1,350,840
Edwards	198,601	54,506	237,690		13,994	10,734	10,086	525,809
Effingham	297,855	140,788	333,765	11,451	70,629	25,656	10,400	802,244
Fayette	147,453	94,441	509,052		64,411	83,076	4,790	903,223
Ford	673,165	348,630	3,143	519	90,472	67,705	9,030	1,192,684
Franklin	199,346	93,017	228,292		59,109	12,740	47,400	580,804
Fulton	725,050	290,114	263,389	46,972	134,500	88,112	68,873	1,626,010
Gallatin	140,256	21,330	101,880		20,107	10,366	29,160	323,099
Greene	606,941	316,842	689,915		52,199	263,363	56,000	1,965,260
Grundy	438,868	273,300		3,888	123,050	213,357	11,928	1,064,391
Hamilton	968,212	18,828	35,121		148,387	4,856	11,965	1,187,369
Hancock	845,810	223,098	137,970	9,425	115,836	83,306	38,902	1,454,254
Hardin	59,075	112,806	28,916		1,955	12,320	6,919	222,101
Henderson	645,078	107,366	55,100	39,900	60,190	124,944	44,605	1,076,583
Henry	1,405,138	320,309		75,400	193,557	298,040	26,369	2,479,503
Iroquois	1,525,462	344,890	32,570	1,762	161,524	161,038	62,610	2,289,826
Jackson	133,672	64,697	300,754		27,788	13,342	6,984	613,237
Jasper	71,093	124,880	203,381		19,885	49,050	9,185	478,377
Jefferson	249,627	79,245	460,080		48,546	69,073	23,545	931,016

...y	190,370				8 700	178,830	14,041	1,530,253
aviess	635,337	526,910	53,500	18,612	314,497	182,001	29,638	1,563,458
ison	226,881	59 590	118 635		14,020	4,462	58,750	482,335
e	395,810	339,330	12,775	11,211	242,035	250,967	73 795	1,825,923
kakee	171,496	342 240		4,492	532,264	275,528	60,875	2,386,895
dall	318,450	158,848		46,608	56 490	185,928	19,000	785,324
x	095 642	339,080	41,009	57,742	206,003	441,522	154,975	2,335,973
e	192,840	309 463	10,610	33,535	174,172	120 066	16,340	853,026
alle	625 623	701,334	55,613	30,308	303,906	41,154	21,683	2,779,621
rence	116 261	56,463	415,569		12 710	22,740	12,324	636,067
	931,042	337,680		426,696	172,696	162,240	64,540	2,091,894
ngston	587,749	411,900		21,024	253,505	320,008	64,335	2,661,521
an	784,086	158 256	159,492	13,258	41,587	163,690	29,964	1,350,333
on	899,851	239,034	97,230	7,300	118,789	138 795	67,525	1,568,524
oupin	555 456	349,282	1,134,810		78,330	108,642	22,792	2,249,342
ison	443,568	171,752	1,552,485		112 112	199,708	72,936	2,552,561
ion	288,109	109 084	156,494	17,416	72 870	130,549	59 570	834,122
shall	743,821	134,631	5,880	29 655	167 984	94,584	14,976	1,191,531
on	307,270	31,866	102 358	7,156	58 974	29,180	21,237	558,041
sac	118,134	39,340	73,962	43,133	6 456	3 276	21,275	305,476
onough	560,995	198,639	39 564	58,663	157,675	155,619	33,750	1,204,905
lenry	561,910	503 305	26,095	32,315	334,750	234,200	105,100	1,797,675
ean	909 849	530 488	94,216	55,537	390,172	361,551	514,400	3,855,213
ard	455,895	54,252	80,246	3,776	32,008	108,385	10,660	745,222
cer	852,751	157,911	44,928	155,531	111,965	181,455	18,312	1,522,853
roe	137 104	42,960	683,412		87 675	36,980	18,480	1,006,611
tgomery	287 652	224,226	737,013		56 715	99,356	37,595	1,442,554
gan	619 230	232,980	177,507	20 915	107,916	235,681	72,000	1,466,229
ltrie	491,370	99,873	6,382	3,095	34 871	97 677	37 200	800,468
	132,591	447,180	98,017	343,629	507,016	52,187	12,075	2 592,995
ia	701,537	215 272	36,653	9,129	175,931	116,767	20 287	1,275,576
y	46,567	14,437	133 222		8,110	10,124	7,940	223,400
t	414,342	54,172	30 221	5,062	57,908	98,361	24 417	684,483
	781,892	230,912	991,937		28,026	124,101	48,839	2,205,707
e	136,050	56,928	7,214		13,455	13,067	16 464	243,178
iski	59,719	24,508	96,520		3,591	1,232	31,795	217,365
nam	271,862	71,364	2,822	28,544	50,682	51,512	4,994	481,780
dolph	144,677	106,416	1,068 792		120,401	12,705	30 254	1,483,245
land	57,407	65,713	329,664	12,702	20,466	21,838	25,300	533,090
k Island	395,033	80,370	6 210	61,389	63,705	164,279	35,187	806,170
ne	137,044	34,447	84,746		19 474	6 435	8,160	290,306
ramon	153,668	171,805	174,870	3,466	30,540	273,959	72,386	1,880,694
yler	356,589	127 688	189 278	12,142	34 237	52,959	29,835	802,728
t	189,286	51,975	144,204	5,505	3,547	83,160	5,055	482,731
by	617,947	187,372	266,469	19 479	92,713	102,684	31,986	1,318,650
k	606,529	114,415		18,585	117,126	91,167	30,050	977,872
Clair	596,537	206,086	2,062,274		242,748	87,862	42,727	3,208,234
henson	043,550	525,775	156,160	91,207	291,606	195,382	47,595	2,351,275
well	695 253	128,544	103,950	10,177	57,927	55,281	29 535	1,054,667
n	298,435	32,875	409,884		31,829	21,496	041	832,560
nilion	883,369	181 686	282,024	20,982	58,177	165,482	870	1,620 590

Value Principal Crops in Illinois in 1878—Continued.

Counties	Corn	Hay	Winter Wheat	Spring Wheat.	Oats	Pasture	Orchard.	Total Value.
Wabash	$164,424	$52,215	$304,644	..	$14,691	$30,693	$5,831	$569,498
Warren	1,326,259	192,909	48,375	$28,787	165,700	187,634	43 380	1,992 944
Washington	116,172	24 285	684,913		47 615	30 176	32 610	935 771
Wayne	319 485	117,072	289,816	.	51 387	108,031	90,360	976 151
White	380,802	81,823	413,241	.	15,515	21,930	5,955	919,266
Whiteside	1,003,763	463,470		170,176	260,841	369,890	115 080	2,383,220
Will	1,532,159	483,134		46,683	650,440	117,189	8,145	2,837,750
Williamson	157,432	59,937	243,126		46,683	20,692	14,085	541,955
Winnebago	674,693	164,020	43,680	54,475	395 547	78 380	27 075	1,437,870
Woodford	666,402	226 704	2,088	135,999	260,012	99,438	7,800	1,398,443
Total	$56,035,848	$19,994,341	$23,870,257	$3,189,209	$12 451,890	$12,324,647	$4,181,662	$132,047,854

HOG PRODUCT, 1878.

Counties	Number hogs May, 1878 assessed	Per cent. of hogs assessed, marketed	Number hogs marketed	Average gross weight hogs marketed	Total gross weight hogs marketed	Average value per 100 lbs., live weight	Value of hog product, marketed
Adams	62,953	55	34,624	253	8,759,872	$2 75	$240,897
Alexander	5,860	31	1,817	157	285,269	2 95	8,415
Bond	14,904	70	10,433	222	2,316,126	2 75	63,690
Boone	16,818	90	15,136	253	3,829,408	2 90	111,053
Brown	20,438	67	13,693	242	3,313,706	2 75	91,127
Bureau	83,513	85	70,986	208	21,152,828	2 75	581,730
Calhoun	10,950	85	9,318	225	2,094,300	2 75	57,593
Carroll	37,880	65	24,622	275	6,771,050	2 85	192,975
Cass	10,580	60	6,348	230	1,460,040	2 85	41,611
Champaign	60,153	80	48,122	235	11,308,670	2 70	305,734
Christian	44,646	60	26,788	258	6,911,046	2 70	186,598
Clark	22,269	30	6,681	250	1,670,250	2 50	41,756
Clay	15,957	67	10,692	227	2,427,084	2 30	55,823
Clinton	10,487	48	5,234	216	1,130,544	2 65	26,959
Coles	35,176	60	21,106	225	4,758,850	2 60	119,450
Cook	17,475	70	12,233	250	3,058,250	3 00	91,748
Crawford	16,624	78	11,967	217	2,803,839	2 65	74,503
Cumberland	15,064	90	13,558	180	2,440,440	2 35	57,350
DeKalb	60,041	80	48,033	232	11,143,656	3 00	334,310
DeWitt	28,691	57	16,374	250	4,093,500	2 75	112,571
Douglas	27,876	61	17,004	247	4,199,988	2 75	115,5[illegible]0
DuPage	15,549	80	12,439	240	2,985,360	3 25	97,024
Edgar	35,188	58	20,409	280	5,714,520	2 80	160,007
Edwards	15,391	90	13,852	220	3,046,440	2 25	68,567
Effingham	13,427	50	6,714	225	1,510,650	2 25	33,990
Fayette	29,439	35	10,304	250	2,576,000	2 65	68,264
Ford	25,690	85	21,844	260	5,679,440	2 70	153,345
Franklin	15,162	51	7,733	200	1,546,600	2 60	40,212
Fulton	72,762	62	45,112	270	12,180,240	2 75	334,955
Gallatin	12,655	62	7,846	212	1,663,352	2 60	43,247
Greene	27,928	76	21,225	226	4,796,850	2 25	107,929
Grundy	26,811	72	19,304	232	4,478,528	3 25	145,552
Hamilton	9,522	75	7,142	180	1,285,560	3 00	38,567
Hancock	56,639	71	40,214	238	9,570,932	2 65	253,630
Hardin	9,127	47	4,290	233	999,570	2 50	24,989
Henderson	30,849	55	16,967	267	4,445,351	2 75	122,247
Henry	93,489	70	65,442	287	18,781,854	2 90	544,674
Iroquois	59,009	77	45,437	262	11,904,494	2 85	339,278
Jackson	14,543	69	10,035	244	2,448,540	2 35	57,541
Jasper	17,163	58	9,955	203	2,020,865	2 50	50,522
Jefferson	19,349	54	10,448	227	2,371,696	2 60	61,664
Jersey	18,327	85	15,578	237	3,691,986	3 10	114,452
JoDaviess	45,639	80	36,511	278	10,150,158	2 75	279,129
Johnson	13,977	80	11,182	235	2,627,770	2 35	61,753
Kane	31,839	70	22,287	253	5,638,611	2 85	161,700
Kankakee	14,075	90	12,668	260	3,293,680	2 80	92,223
Kendall	33,510	75	25,133	225	5,654,700	2 65	149,849
Knox	73,101	76	55,557	263	14,611,481	2 80	409,121
Lake	15,020	94	14,119	250	3,529,750	3 03	106,951
LaSalle	84,401	70	59,081	294	17,369,814	3 20	555,834
Lawrence	17,342	70	12,139	187	2,269,993	2 60	59,020
Lee	46,410	75	34,808	183	6,369,681	2 90	184,721
Livingston	87,927	87	76,496	264	20,194,944	2 85	575,556
Logan	46,307	70	32,415	258	8,363,070	2 80	234,166
Macon	47,921	72	34,503	245	8,453,235	2 70	228,237
Macoupin	53,431	89	47,554	225	10,699,650	2 80	299,590
Madison	35,507	60	21,304	253	5,389,912	2 70	145,528
Marion	20,094	62	12,458	190	2,367,020	2 50	59,176
Marshall	34,590	85	29,402	330	9,702,660	2 55	247,418
Mason	18,176	82	14,904	262	3,904,848	2 85	111,289
Massac	10,350	37	3,830	215	823,450	3 15	25,939
McDonough	57,189	70	40,032	250	10,008,000	2 75	275,220
McHenry	28,248	87	24,576	254	6,242,304	2 80	174,785
McLean	98,325	70	68,827	268	18,445,636	3 10	571,815
Menard	17,976	65	11,684	241	2,815,844	2 75	77,436
Mercer	63,813	60	38,288	303	11,601,264	2 90	336,436

Hog Product, 1878—Continued.

Counties	Number hogs assessed May, 1878	Per cent of hogs assessed marketed	Number hogs marketed	Average gross weight hogs marketed	Total gross weight hogs marketed	Average value per 100 lbs., live weight	Value of hog product, marketed
Monroe	11,242	47	5,284	225	1,188,900	$3 25	$38,639
Montgomery	30,495	70	27,647	225	6,220,350	2 60	161,729
Morgan	12,212	71	8,671	251	2,176,421	2 85	62,028
Moultrie	23,782	74	17,590	222	3,906,878	2 95	115,253
Ogle	67,204	80	53,763	250	13,440,750	3 00	403,223
Peoria	55,220	60	33,132	300	9,939,600	2 80	278,309
Perry	6,989	77	5,382	237	1,275,534	2 75	35,077
Piatt	28,032	77	21,585	245	5,288,325	2 95	156 006
Pike	52,650	82	43,173	252	10,879,596	2 65	288,309
Pope	18,327	58	10,630	208	2,211,040	2 40	53,065
Pulaski	6,287	47	2,955	147	434,385	2 75	11,946
Putnam	14,681	87	12,872	310	3,990 320	3 05	121,705
Randolph	18,219	50	9,110	240	2,186,400	3 00	65,592
Richland	12,752	75	9,564	210	2,008,440	2 20	44 187
Rock Island	37,464	70	26,225	277	7,264,325	3 00	217,930
Saline	15,866	75	11,920	250	2,980,000	2 25	67,050
Sangamon	65,698	60	39,519	260	10,274,940	2 80	287,698
Schuyler	32,609	80	26,087	242	6,313,054	2 75	173,609
Scott	16 607	80	13,286	265	3,518,790	2 50	87,970
Shelby	45,460	*69	31,367	225	7,057,575	2 45	172,911
Stark	38,156	65	24,801	310	7,688 310	3 10	238,338
St Clair	12,945	30	3,884	270	1,048,680	3 00	31,460
Stephenson	55,927	69	38,590	262	10,110,580	2 70	272,986
Tazewell	41,041	80	32,833	260	8,536,580	2 90	247,561
Union	17,046	25	4,262	275	1,172,050	3 50	41,022
Vermilion	48,129	75	36,097	238	8,591 086	2 55	219,073
Wabash	9,046	73	6,604	225	1,485,900	2 35	34,919
Warren	52,794	74	39,168	271	10,614,528	2 95	313,129
Washington	10,290	50	5,145	210	1,080,450	2 75	29,712
Wayne	20,819	72	14,990	222	3,327,780	2 45	81,531
White	24,624	72	17,729	225	3,989,025	2 40	95,737
Whiteside	52,650	55	28,958	325	9,411,350	2 95	277,635
Will	37,954	90	34,159	300	10,247,700	3 00	307,431
Williamson	18,318	42	7,694	212	1,631,128	2 85	46,487
Winnebago	35,062	80	28,050	250	7,012,500	2 80	196,350
Woodford	48,402	72	34,849	275	9,583,475	2 60	249,170
Total	3,335,550	Av 69	2,345 391	Av 244	597,972,767	Av $2 80	$16,724,384

*Estimated.

SHEEP.

Counties	No. killed by dogs in 1877	Value per head of sheep killed in 1877	Assessed No. of sheep in 1878	Per cent killed by dogs in 1878	No. killed by dogs in 1878	Value per head of sheep killed	Loss in 1878	Loss in 1877	Loss in 1876
Adams	533	$3 00	10,768	06	646	$2 75	$1,777	$1,599	
Alexander			889						
Bond	143	2 33	10,115	02	202	1 75	354	333	$898
Boone	1,160	2 42	15,442	04	618	2 10	1,298	2,807	572
Brown			4,001	05	200	2 50	500		.....
Bureau			5,752						62
Calhoun	33	1 50	1,082	04	43	1 50	65	49	111
Carroll	171	4 00	3,269	05	163	3 50	571	684	414
Cass	23	2 00	1,466	01	15	2 50	38	46	70
Champaign	368	2 00	5,800	03	174	2 25	392	736	2,239
Christian			6,635	02	133	2 20	293		
Clark	589	2 00	8,237	07	577	2 00	1,154	1,078	543
Clay	359	2 00	7,207	04	288	1 65	475	718	1,024
Clinton	133	1 50	5,526	03	166	2 00	332	199	153
Coles			6,971	02	139	2 00	278		1,193
Cook			5,439						
Crawford	275	1 75	8,158	02	169	1 75	296	481	
Cumberland			4,798						768
DeKalb	504	2 66	12,135	01	121	2 50	303	1,340	549
DeWitt	227	2 50	9,182					567	
Douglas			4,364	03	131	1 50	197		396
DuPage	133	3 00	12,288	01	123	3 00	369	399	165
Edgar	254	1 75	13,139	03	394	1 85	729	444	263
Edwards	160	2 00	8,887	02	178	2 00	356	320	
Effingham			4,833						1,499
Fayette	534	1 87	12,238	05	612	1 50	918	998	
Ford	41	2 75	1,123					112	
Franklin	359	1 50	6,451	05	323	1 45	468	538	247
Fulton			16,100	01	162	1 00	162		
Gallatin	71	1 80	3,436					127	236
Greene	148	2 50	8,513	05	427	2 50	1,068	370	1,238
Grundy	69	3 75	2,242	01	22	3 50	77	258	
Hamilton	352	1 25	6,130	06	368	1 [illegible]	478	440	
Hancock	98	2 50	4,070	02	81	2 [illegible]	194	245	399
Hardin			2,249	01	22	1 00	22		139
Henderson			1,782						
Henry	190	3 00	4,119	01	41	3 50	144	570	...
Iroquois	31	2 00	4,495					68	
Jackson	172	1 75	3,070					301	403
Jasper	601	1 75	7,313	03	219	1 40	307	1,057	....
Jefferson	386	1 65	8,998	04	360	1 50	540	636	1,134
Jersey			1,320	02	86	2 50	215		
JoDaviess	435	2 75	7,819	02	156	2 00	312	1,196	1,473
Johnson	207	1 50	3,601					310	218
Kane	765	3 00	13,010	02	260	2 75	715	2,295	...
Kankakee			2,722						51
Kendall	507	2 75	8,517	07	596	2 50	1,490	1,394	1,313
Knox	315	1 85	8,127	04	325	2 15	699	564	1,884
Lake	3,824	2 50	64,653	01	647	1 50	971	9,560	..
LaSalle	615	2 50	10,720	02	214	3 35	717	1,537	4,324
Lawrence	212	2 50	5,442	04	218	2 00	436	530	699
Lee	309	3 50	6,905	03	207	2 00	414	1,081	219
Livingston			2,851						
Logan	268	3 25	4,625	01	46	2 85	131	871	...
Macon			6,348	02	127	2 50	318		117
Macoupin	688	2 50	18,270	02	365	1 95	712	1,720	2,302
Madison	129	2 75	7,137	02	143	2 50	358	354	704
Marion			10,539	01	105	1 50	158		486
Marshall			4,710						.....
Mason			533						.....
Massac			1,332	06	92	1 00	92		
McDonough	215	2 00	6,702	05	335	1 50	503	430	946
McHenry	1,330	3 00	43,088	02	862	2 00	1,724	3,990	829
McLean	302	2 50	16,633	02	333	2 50	833	755	1,574
Menard	84	1 50	3,732	03	112	3 35	375	126	154
Mercer	343	1 75	4,577	05	229	2 75	630	600	.....

Sheep—Continued.

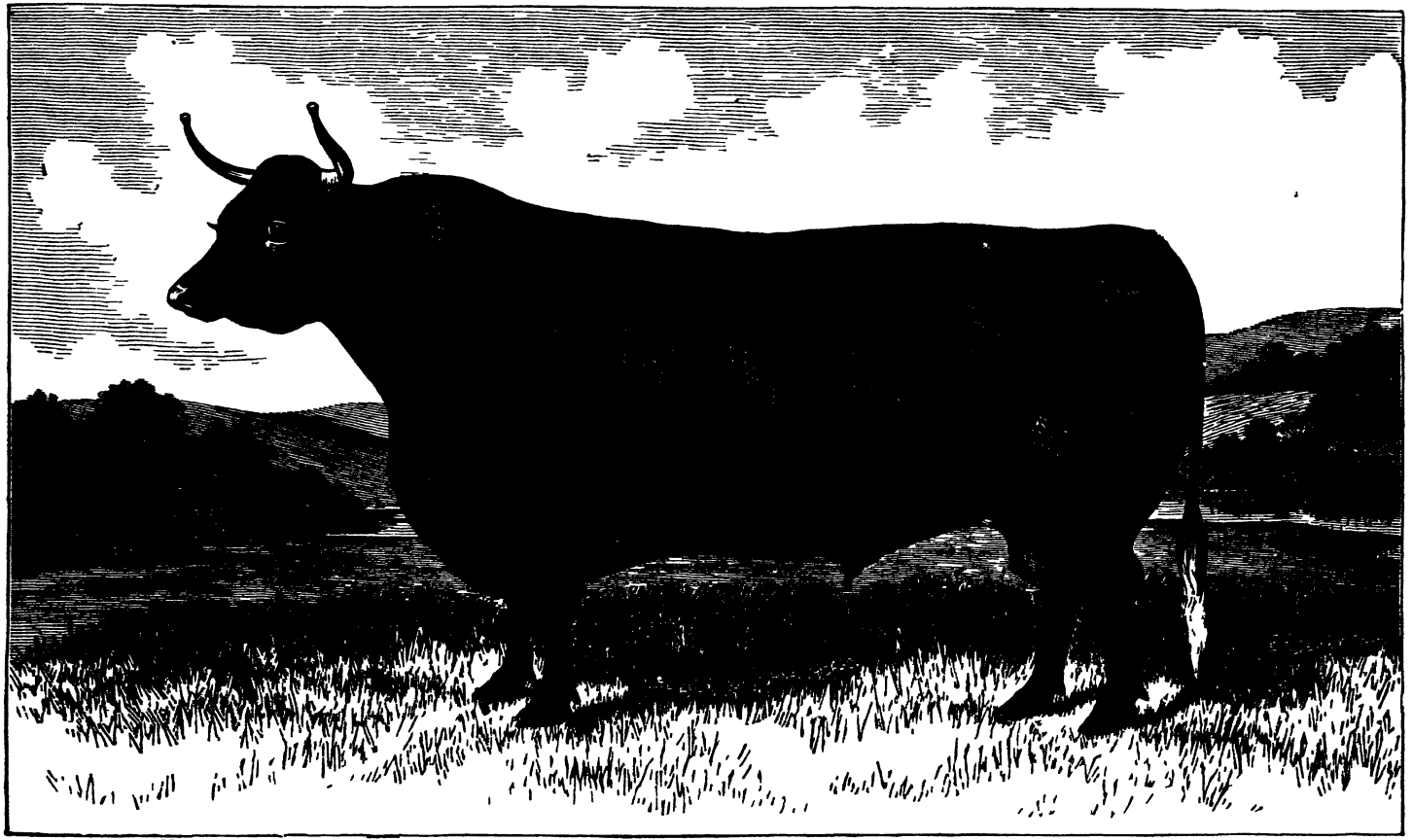
Counties	No killed by dogs in 1877	Value per head of sheep killed in 1877	Assessed No of sheep in 1878	Per cent killed by dogs in 1878	No killed by dogs in 1878	Value per head of sheep killed	Loss in 1878	Loss in 1877	Loss in 1876
Monroe			1 443						
Montgomery			11 [illegible]	05	56[illegible]	$2 00	1 124		928
Morgan	85	$4 00	6 371	05	319	3 50	1 117	1 460	
Moultrie	122	1 25	4 885	05	244	1 65	403	152	
Ogle	383	3 00	8 146					1,149	911
Peoria			5 678	02	114	1 75	20		
Perry	140	2 00	[illegible] 945	03	88	2 00	176	240	
Piatt	204	3 00	3 1 3	06	188	3 00	564	612	152
Pike	254	2 25	11 [illegible]	07	790	[illegible] 00	1 580	1 651	1,007
Pope	219	1 50	6 768	05	338	1 50	507	328	
Pulaski			871	03	26	1 85	48		
Putnam	41	3 00	1 597	01	16	[illegible] 60	42	123	62
Randolph	454	3 00	6 147	08	492	2 50	1 230	1 362	
Richland	3[illegible]	1 50	6 219	03	187	1 75	327	493	
Rock Island			1 987	05	99	3 25	322		
Saline	198	1 37	6 [illegible]					271	443
Sangamon	420	2 83	15 488	02	310	3 50	1 085	1 188	1 226
Schuyler	10	[illegible] 00	5 701	08	342	1 75	599	620	
Scott			4 751	02	95	1 25	119		
Shelby	555	1 25	14 132	02	283	2 00	566	418	
Stark			6 385	01	64	[illegible] 00	192		
St Clair	81	2 75	4 023	01	40	[illegible] 35	94	506	538
Stephenson	114	3 90	7 698	02	154	1 75	270	1 242	
Tazewell	230	2 75	7 805	07	546	3 25	1 775	657	301
Union			3 861	06	32	2 00	464		
Vermilion	1 201	2 65	20 493	01	830	2 15	1 763	3 182	623
Wabash			3 [illegible]	04	135	[illegible] 50	338		
Warren	41	3 75	4 6 6	01	46	2 16	99	153	464
Washington	401	[illegible] 00	4 064	10	406	1 50	609	802	
Wayne	307	1 50	10 249	03	307	1 50	461	459	1 049
White	412	1 25	6,13[illegible]	05	307	1 25	384	515	165
Whiteside			5 805	02	116	4 00	464		
Will			6 586	02	132	3 00	396		
Williamson	30	1 75	7 4[illegible]	03	224	1 40	314	694	371
Winnebago	[illegible]	2 25	12 333	01	123	[illegible] 40	295	524	
Woodford	79	1 50	[illegible] 357					118	
Total	26 755	$2 38	775 75[illegible]	03	20 720	$[illegible] 12	$43,88[illegible]	$63,752	$30,578

HOG CHOLERA.

Counties	No. hogs assessed in 1877.	No hogs assessed in 1878.	Per cent hogs died in 1878	No. hogs lost by disease 1878	Average weight dead hogs	Loss by disease, 1878, in lbs	Average value per 100 lbs.	Amount loss in 1878	Amount loss in 1877	Amount loss in 1876
Adams	56,462	62,953	39	24,552	116	2,848,032	$2 75	$78,321	$34 755	$59,910
Alexander	4 685	5,860	9	527	70	36,890	2 95	1 0 8	1 035	185
Bond	11,383	14,904	25	3,726	70	260,820	2 75	7,173	12,847	7,726
Boone	12 747	16 818	4	673	200	134 600	2 90	3,9 3	4,763	
Brown	18 295	20,428	17	3,474	75	260,550	2 75	7,165	6,195	7,141
Bureau	69 617	83,513	1	835	80	66,800	2 75	1,837	3,062	1,756
Calhoun	9,923	10 950							2,827	6,835
Carroll	37,738	37,880	30	11,364	125	1,420 500	2 85	40 484	62 191	7,867
Cass.	12,504	10,586	32	3,386	63	213,318	2 85	6 080	6,000	21 859
Champaign	54,188	60,153	12	7,218	80	577,460	2 70	15 591	24,231	50,684
Christian	40,871	44,646	36	16,073	65	1,044,745	2 70	28 208	29,820	26,203
Clark.	20,356	22,26	25	5,567	75	417,525	2 50	10 638	12,073	14 151
Clay	12 219	15,957	5	798	88	70,224	2 30	1,615	1,464	5,439
Clinton	9,679	10 487	19	1,993	91	181,363	2 65	4 806	9,572	7,305
Coles .	31,432	35,176	10	3,518	115	404,570	2 60	10 519	4,713	51,706
Cook ..	14 093	17,475								
Crawford.	28,228	16,624	13	2 161	100	216,100	2 65	5,727	27,252	
Cumberland.	12,346	15,064	6	904	100	90,400	2 35	2,121	5,900	14,125
DeKalb	51 426	60,041	12	7,205	135	972 675	3 00	29,180	27,394	2 979
DeWitt	25 319	28,691	27	7,747	85	658,495	2 75	18,109	15,676	50,229
Douglas.	25,738	27,876	33	9,199	90	827,910	2 74	22,768		19,889
DuPage	12,913	15,549							822	
Edgar	29,597	35 188	16	5,630	78	439,140	2 80	12,296	10,605	17,865
Edwards	10 973	15 391	5	770	50	38,500	2 25	866	5,450	1,107
Effingham	14,373	13,427	30	4,028	75	302,100	2 25	6 797	22,534	4,893
Fayette	29,036	29,439	10	2,944	80	235,520	2 65	6,241	49,720	
Ford	23,212	25,699	10	2 570	100	257,000	2 70	6,939	6,758	2,932
Franklin ..	12,063	15 162	12	1,819	87	158,253	2 60	4,115	9,689	3,714
Fulton	66,382	72,762	25	18,190	105	1,909,950	2 75	52,524	35,944	122,951
Gallatin	8 014	12,655	7	876	40	35,040	2 60	911	7,176	4,617
Greene	28 146	27,928	13	3,631	87	315,897	2 25	7 108	15,308	23,458
Grundy	20 202	26,811	2	536	160	85,760	3 25	2,787	3,514	
Hamilton	5 961	9,522	10	952	50	47,600	3 00	1,428	2,950	2,289
Hancock	49,390	56 639	22	12,461	105	1,308,405	2 65	34,673	24,899	26,703
Hardin .	7,364	9,127	5	456	100	45 600	2 50	1,140	12,585	1 908
Henderson	27 126	30,840	25	7,712	112	863,744	2 75	23,753	13,560	34,523
Henry	83,281	93 489	6	5 609	150	841,350	2 90	24,399	32,978	19,350
Iroquois	51,257	59,009	12	7,081	112	793,072	2 85	24,399	5,763	7,714
Jackson.	14,339	14,513							12,387	2,829
Jasper.	11,269	17,163	28	4,806	37	177 822	2 50	4,446	8 676	2,964
Jefferson	17,128	19,349	10	1,935	100	193,500	2 60	5 031	13,017	5,308
Jersey.	17,460	18 327	3	550	200	110,000	3 10	3,410	2,278	6,433
JoDaviess	39 795	45,639	6	2 738	167	454,246	2 75	12,492	5,344	1,043
Johnson ..	13,623	13,977	7	978	100	97,800	2 35	2,298	3,830	1,301
Kane ..	26,730	31,839	5	1,592	157	249,944	2 85	7,123	15,630	3,003
Kankakee	15,865	14,075	..	704	150	105,600	2 80	2 957	1,962	688
Kendall .	28 428	33 510	20	6,702	150	1 005,300	2 65	26,640	29,061	9 836
Knox . ..	68 545	73,101	17	12,427	126	1,565,802	2 80	43,842	20,390	61,232
Lake ..	12,138	15,020							16,426	
LaSalle .	74,351	84,401	23	19,412	160	3,105 920	3 20	99,389	33,962	4,006
Lawrence	14 11	17,342	11	1 908	110	209 880	2 60	5,457	10,867	8,657
Lee .	37 539	46,410	18	8,354	158	1,319,932	2 90	38,278		
Livingston	69,247	87 927							14 609	
Logan	45,370	46,307	10	4,631	75	347,325	2 80	9,725	17 952	98,782
Macon. ...	46,901	47,921	22	10,543	117	1,233,531	2 70	33,305	21,640	17,900
Macoupin .	47,727	53,431	4	2,137	67	143,179	2 80	4,009	11 547	6,715
Madison.	34,521	35,507	20	7,101	100	710,109	2 70	19,173	16,621	7,552
Marion	16,586	20 094	10	2,009	75	150,675	2 50	3,767	2,321	9,618
Marshall .	32,343	34,590	1	346	150	51,900	2 55	1,323	15,975	11,700
Mason	16,660	18,176	7	1,272	150	190,800	2 85	5,428	24,140	1,749
Massac .	66,616	10,350	14	1,449	87	126,063	3 15	3,971	2 529	
McDonough..	50,580	57,189	17	9,722	87	845,814	2 75	23,260	17,478	36,127
McHenry . .	24,278	28,248	5	1,412	95	134,140	2 80	3,756	2,174	3,903
McLean	82,824	98,325	22	20,632	112	2,310,784	3 10	71,634	24,347	27,436

Hog Cholera—Continued.

Counties	No. hogs assessed in 1878	No. hogs assessed in 1878	Per cent hogs died in 1878	No hogs lost by disease 1878	Average weight dead hogs	Loss by disease, 1878, in lbs	Average value per 100 lbs	Amount loss in 1877	Amount loss in 1877	Amount loss in 1876
Menard	18,056	17,976	29	5,213	80	417,040	$2 75	$11,469	$27,120	$30,963
Mercer	54,468	63,183	28	17,691	166	2,936 736	2 90	85,166	31 038	25,701
Monroe	10,160	11,242	10	1,124	175	196,700	3 25	6,393	3,175	.
Montgomery	37,732	39 495	25	9,874	50	493 700	2 60	12,836	23,690	11,171
Morgan .	19,198	12,212	23	2,809	106	297,754	2 85	8,486	26,597	44,232
Moultrie	21,720	23 782	18	4,281	85	363,885	2 95	10,735	4,050	9 216
Ogle . .	64,487	67,204	16	10,753	103	1,107,559	3 00	33,227	101,168	8,818
Peoria	50 663	55,220	27	14,909	160	2,385,440	2 80	66,792	9,150	41,736
Perry .	4,553	6,989	6	419	100	41,900	2 75	1,152	5,972	2,487
Piatt	27,409	28,032	15	4,205	80	336,400	2 95	9,924	38,372	45,246
Pike	48,100	52,650	12	6,318	125	789,750	2 65	20,928	21,933	48,012
Pope .	11,851	18,327	5	916	87	79,692	2 40	1,913	5,331	4,547
Pulaski .	5,537	6,287	3	189	50	9,450	2 75	260	4 183	
Putnam	11,965	14,681	3	440	92	40,480	3 05	1,235	2,949	2,479
Randolph	16,496	18 219	12	2,186	112	244,832	3 00	7,345	14,292	10,490
Richland	10,492	12,752	8	1,020	29	29,580	2 20	651	4,721	1,753
Rock Island	32,486	37,464	7	2,622	97	254 334	3 00	7,630	16,602	12,083
Saline	11 334	15,866	10	1,587	50	79,350	2 25	1,785	1,083	6,348
Sangamon	60,044	65,698	17	11,169	73	815,337	2 80	22,829	18 480	69,962
Schuyler	22 346	32,609	12	3,913	110	430,430	2 75	11,837	6,616	50,380
Scott .	14,641	16,607	5	830	100	83,000	2 50	2,075	12,435	8,508
Shelby ...	39,367	45,160	10	4,516	120	545,520	2 45	13,365	12,217	34,161
Stark	34,793	38,156	10	3,816	150	572,400	3 10	17,744	52,670	27,308
St Clair .	12,396	12,945				. .			14,720	5,710
Stephenson	47,330	55,927	12	6 711	85	570,435	2 70	15,402	19,993	7,658
Tazewell ..	38,861	41,041	15	6,156	88	541,728	2 90	15,710	47,815	32,532
Union	13,957	17,046								.
Vermilion	46,951	48,129	10	4,813	90	433,170	2 55	11,046	45,973	27,888
Wabash	7,287	9,046	8	724	67	48,508	2 35	1,140	3,641	8,872
Warren . .	54,737	52,794	20	10,559	99	1,045,341	2 95	30,838	22,327	11 586
Washington	7,852	10,290	35	3,601	100	360,100	2 75	9,903	7,361	2,269
Wayne	13,639	20,819	4	833	60	49,980	2 45	1,225	3,665	3,146
White	20,043	24,624	16	3,941	73	287 693	2 40	6,905	16 692	8,022
Whiteside .	49,408	52,650	22	1,158	100	115 800	2 95	3,416	24,067	6,932
Will	30,416	37,954								.
Williamson .	13,597	18,318	19	3,480	75	271,000	2 85	7,724	9,260	5,400
Winnebago	28,156	35,062	12	4,207	167	702,509	2 80	19,672	1,313	. . . . .
Woodford	45,001	48,402	15	7,260	125	907,500	2 60	23,595	21 744	.
Total .	2,961,366	3 334,920	14	474,758	108	51,105,058	$2 82	$1,438,589	$1,583,415	$1,576,012



DEVON BULL "SHELTO 2nd."—Exhibited by L F Ross, Avon, Ill. Awarded Sweepstakes Premium, Illinois State Fair, 1878.

APPLE ORCHARD.

STATEMENT OF J. B. SPAULDING.—(See page 126.)

Our orchard is located in Clear Lake township, Sangamon county, Illinois, near Riverton Station on Wabash railroad

In planting we had chiefly a commercial orchard in view, and to that end selected mostly of the following five varieties, viz : Ben Davis, Jonathan Willowtwig, Winesap and Jeniton. Of the trees comprising our whole orchard, two-thirds are Ben Davis, and for further testing, we have also planted two or three each of the following varieties, viz Red Astrachan, Early Harvest, Red June, Early Red, Golden Sweet, Keswick Codling, Sweet Bough, Buckingham, Saps of Wine, Full Wine, Fall Pippin, Famuse Maiden Blush, Pound Sweet, Porter, Rambo, Sweet Pear Baldwin, Bellflower White, Bellflower Yellow, Domini, Black Gillifiower, Rhode Island Greening, Grimes Golden Pippin, Huntsman's Favorite, King of Tompkins Co , Nickajack, Pomegris, Romanstem, Rome Beauty, Seek No Further, Sweet Cider, Stark and Talman Sweet. In consequence of our oldest trees having not been planted but six years we have marketed but few the past year, the production compared with the prospective crop being small

The soil is of a strong clay loam, having been originally timber land It varies in different portions somewhat according to locality, the knolls contain a little sand, the subsoil is a reddish clay, with occasional deposits of sand.

In 1873 two thousand trees were planted 15x30 feet apart, adding largely to our orchard by planting each season since We completed our 80 acre apple orchard, containing over 10,000 trees, in spring of 1878 Ultimately we intend removing each alternate tree in the row, by this method we obtain double the amount of fruit, when the trees are young, than we otherwise would We also use these surplus trees for experimenting We hope to be able to lay before the public soon a system by which trees can be made to fruit much younger and more abundantly as they grow older We experience no difficulty in trimming our trees to the most handsome and desirable shapes, by a proper attention to pruning, when the trees are one and two years old With conspicuous, perhaps we ought to say insignificant exceptions, after the tree is three years old we let nature do its own pruning Our object is to keep the ground and trees clean, and entirely free from weeds, this we easily attain by cultivating the ground between the rows in the raising of our nursery stock, to the exclusion of all insects, borers and tree pests, all of which are strangers to our orchard

The trees having attained a sufficient size to preclude the use of agricultural implements in the cultivation of the ground between the rows, we seed it to clover and timothy Our experience has taught us to hand pick our apple crop, as far as possible; great car to prevent the bruising of the fruit must be exercised, not until well in the edge of cool weather, late in the fall, do we remove the apples from the orchard Having allowed the crop to remain in barrels until this time, preparatory to marketing or putting away in fruit house The varieties that have proven the most profitable with us for marketing are the following, viz . 1st Ben Davis, 2d Jonathan; 3d Willowtwig, Jeniton and Winesap

Respectfully submitted,

J B SPAULDING

PEAR ORCHARD.

STATEMENT OF J. B. SPAULDING.—(See page 126.)

Our orchard is located in Clear Lake township, Sangamon county, Illinois, near Riverton Station, on Wabash railroad, containing about one and one-half acres (1½) The varieties are as follows, viz . Bartlett, Rostuzer, Beurre De Anjou, Beurre Clairgeau, Clapps Favorite, Flemish Beauty, Sickle and Lawrence

Our orchard being but five years planted we have as yet gathered no fruit for market The soil is a light colored clay loam, resting upon sand Trees planted in spring, 1874 Distance apart, twenty (20) feet We avoid pruning as much as possible Cultivated the ground four years after planting, then seeded the ground to clover and timothy We have used no manure on pear orchard, believing that slow growth is very important when young We are very anxious in regard to the future of the pear culture, and shall make many experiments in the coming few years

We would name first as the most profitable for market, Beurre De Anjou, Beurre Clairgeau and Flemish Beauty; second, Bartlett & Clapps Favorite.

Respectfully submitted,

J B SPAULDING.

CANADA THISTLES.

The act in relation to Canada thistles, has been observed only to a limited extent. The following are the reports made to the Secretary of the State Board of Agriculture for the year 1878:

KENDALL COUNTY--KENDALL TOWNSHIP

The undersigned commissioner of Canada thistles for the town of Kendall and said county, would report that there are four patches of said thistles now growing in said town, on the farms of Henry Gable, J. F Pope, R. Gates, Thomas Greenfield, and K Hopkins The piece on Mr Gable's farm is about one quarter of an acre The treatment on said piece has been six barrels of salt applied to them, and the ground plowed several times, which Mr Gable thinks has thinned them out some, but the same course will have to be faithfully pursued for a year or two in order to eradicate them

The piece on J F Pope's farm has been hacked and salted, and sheep run on the piece, which has given good result

The piece on R Gates' farm has been mulched, which has proved effective, and will do so if there is enough put on the piece

The piece on Thomas Greenfield and K Hopkins, has just been mown and hacked

In every case I agreed with the owners to get rid of them, but it will take time and perseverance to entirely eradicate them How they were introduced into the town is not known.

JAMES HARKNESS, *Commissioner Canada Thistles*

KANE COUNTY -BATAVIA TOWNSHIP

The undersigned commissioner of Canada thistles, for said town for the year 1878, would make the following report:

1st. There are Canada thistles growing in different sections of said town.

2d Where located South of the village of Batavia at what is called the big culvert, under the C B. & Q R R, running to Aurora on the east side of Fox river, there are Canada thistles in different places on the banks of the stream of water running through said culvert to Fox river, some fifty or sixty rods distant, which is unenclosed land They were introduced some thirty years ago by a man who came from the east to work on the railroad in straw and feed, which he brought with him Following down the river to the farm of Mr Ford, there is a patch on the bank of the river; also some in the field which is supposed to have come from those above of about five rods long and two wide I also found a patch in Baird's pasture of three by three rods, covered more or less, supposed to have come there by emigrants camping there and feeding with grain brought with them And there are a few on the south west corner of Edmond Griffith's farm How they came there is not known I also find some on Dr Clark's farm, supposed to have come there in grass seed from the east And I learn there are some on the land owned by Jack Roweliff, in Nelson Grove How they first came there is not known to me Also on Addison Weaver's land, in Nelson Grove, there are three small patches. How they came there I could not find out, and I have also found some on the south side of the stone bridge, next to Tomby building, which seed is supposed to have been in some straw which was in some packing boxes and thrown there

3d Treatment I in the first place, on the uninclosed land, cut them with a scythe, after that I took a common hoe made sharp, cut them from one to two inches below the surface of the ground, which I did as often as I could find any to cut, at a cost of $18 75, $10 50 of which is not paid me The result is, they look as though one or two more seasons, with the same attention paid to them, they would be killed or nearly so

On the enclosed lands the owners or occupants have cut them so that they do not spread much if any Some of them have been trying salt, another petroleum oil The result cannot be well determined till another season

4th No report

5th With my present views, my suggestions and recommendations would be to cut them down below the surface with a hoe or some better tool as often as they show their heads Why? Because it is through the tops they breathe, like all other vegetables, and if they are not permitted to breathe they must die

All of which is submitted to your consideration, by

A A SMITH, *Canada Thistle Commissioner*

LASALLE COUNTY—FREEDOM TOWNSHIP.

The undersigned commissioner of Canada thistles for the town of Freedom, in the county of LaSalle, would report that Canada thistles are growing on three farms in said town viz: The farm of J G Doan on the S W ¼, sec. 2 covering a piece of ground three rods square Do not know how they came there; they have not been allowed to go to seed this year

2d On John Dobbins farm upon the E ½ of the S. E ¼ sec 32, they occupy some eight rods of ground The plant has not been allowed to go to seed this year The seed was brought in flax seed sown by W W Crumpton.

3d On Barte Thompson's farm upon the N E ¼, sec 27, the thistles cover ¼ of an acre but have not been allowed to go to seed this year I have not been able to find out how they came there

My mode of treatment is to plow the ground every month in the season, in the dark of the moon There was a piece in the town of Dayton killed by that treatment in two years, which had been growing there for the last 20 years

WM POOL, *Commissioner of Canada Thistles.*

DEVON COW "HENRIETTA"—Exhibited by L F ROSS, AVON ILL Awarded Sweepstakes Premium, Illinois State Fair, 1878

SECOND ANNUAL MEETING

ILLINOIS AGRICULTURAL UNION.

ROOMS DEPARTMENT OF AGRICULTURE,
SPRINGFIELD, January 22, 1879.

The Agricultural Union met as per call of the Executive Committee.
Called to order by the Chairman, J. H. Pickrell, of Harristown.

On motion of L B. Parsons, of Flora,
Charles F. Mills of Springfield, was made Secretary.
The minutes of the previous meeting were read.

On motion of G. W. Davis, of Carrollton, the minutes were adopted.

Motion of John Virgin, of Fairbury, carried,
That the chair appoint a committee on credentials.
Chair appointed the following committee on credentials:
Messrs. John Virgin, of Fairbury, E. B. David, of Aledo and H. D. Emery, of Chicago.
The committee, after examining the credentials, made the following report:

Chairman Illinois Agricultural Union:

Your committee would beg leave to report and recommend that the following gentlemen be permitted to take part in the proceedings of the meeting:

John Virgin, Fairbury, Livingston county.
J. H. Pickrell, Harristown, Macon county.
G. H. Stubblefield, Whitehall, Greene county.
J. H. Pickens, Ottawa, LaSalle county.
H. D. Emery, Chicago, Cook county.
W. H. Ellis, Greenfield, Green county.
J. H. Oakwood, Catlin, Vermillion county.
E. B. David, Aledo, Mercer county.
G. W. Davis, Carrollton, Greene county.
M. B. Thomas, Decatur, Macon county.
L. B. Parsons, Flora, Clay county.
Charles F. Mills, Springfield, Sangamon county.
Henry Tunneson, Whitehall, Greene county.
L. Marston, Hoopeston, Vermilion county.
John Lake, Rockford, Winnebago county.
R. C. Straight, Fairbury, Livingston county.
John Gordon, Lynville, Morgan county.
D. R. McMaster, Sparta, Randolph county.

Respectfully submitted.

JOHN VIRGIN,
E. B. DAVID,
H. D. EMERY,
Committee.

On motion of John Lake, of Rockford, the report was adopted, and the committee discharged.

L. B. Parsons, chairman committee on constitution and by-laws for the permanent organization, made a report, which,

On motion of E. B. David, of Aledo, was received.

On motion of Mr. Emery, it was voted that the articles of the constitution and by-laws be considered separately.

The constitution and by-laws having been voted upon by section.

On motion of John Gordon, of Lynville, the constitution and by-laws, as amended, were adopted as a whole, to-wit:

CONSTITUTION.

This association shall be known as the Illinois Agricultural Union

Its object shall be the promotion of all branches of agriculture—to be secured through discussion, public opinion and necessary legislation

The officers of this association shall be a president, first, second and third vice-presidents, secretary and treasurer, and an excutive committee of three persons, all to be chosen by the members of the union at an annual meeting, and to hold their offices for one year and until their successors are duly elected; provided, that the executive committee hold their office respectively one, two and three years, one member being chosen each year

The president shall have a general supervision of the affairs of the union; shall preside at its meetings, preserve order, and regulate its discussions according to ordinary parliamentary rules, and shall be ex-officio a member of all committees.

The vice-presidents shall possess the rights and perform the duties of the president in his absence in the order of their election

The secretary shall attend all meetings of the union, keep a record of its proceedings, as also those of the executive committee, attend to correspondence and perform such other duties as may be required

The treasurer shall receive and keep an account of all funds belonging to the union and pay out the same on the order of the president, counter-signed by the secretary, making an annual or special report when required by said committee

The executive committee shall have the general management and control of all business of the union, shall prepare and issue a programe of business for its annual meetings and make all arrangements therefor

The regular annual meetings of the union shall be held in the city of Springfield, on the third Tuesday of the month of January, special meetings may be called by the executive committee when deemed necessary.

The members of the union shall consist of two delegates, to be chosen by each county agricultural board or other agricultural association in the state In the absence of one delegate, the delegate present shall cast the vote of the county The members of the State Board of Agriculture shall be ex-officio members of the Union In counties having no agricultural association, delegates may be duly appointed by the county boards of supervisors or their chairman

The governor shall be ex-office honorary member of the union

This constitution may be altered or amended at any annual meeting on a vote of two-thirds of the members present voting in favor thereof.

BY-LAWS

1st There shall be no political subject introduced or political question discussed in the proceedings of this association

2d The president shall appoint all committees, when not otherwise ordered by the association

3d The executive committee may fill all vacancies occurring in any offices of the union as also in their own number, until the next annual meeting

4th Early in the session of each annual meeting a committee of five shall be appointed to consider and report a list of officers for the ensuing year, to be submitted for the consideration of the union

5th Election of officers shall be by ballot, unless otherwise ordered by a vote of two-thirds of the members present.

6th A fee of one dollar shall be paid annually by each association or county representative at the annual meeting, and no delegate shall be entitled to a vote until the fee is paid

7th The regular order of business shall be.

1—Reading minutes of last meeting
2—Correspondence
3—Reports of special committees
4—Reports of standing committees
5—Unfinished business.
6—New business

8th Those by-laws may be suspended for the time being at any time by unanimous consent, or abolished, amended or increased at any time by a vote of two-thirds of the members present at any annual meeting

Mr. Pickrell called John Lake to the chair.

The following programme for the meeting was reported by L. B. Parsons of Flora, chairman of the executive committee.

Agricultural Fairs.—Their proper object and management. Hon. D. B. Gillham, Ex-President Illinois State Board of Agriculture.

Agricultural Education.—Dr. J. M. Gregory, regent—Illinois Industral University, Champaign.

Drainage and the laws necessary to its success.—Hon Jonathan Periam, Chicago.

The best methods of manufacturing and preserving dairy products, with proper laws for inspection of the same.—Dr. J. Teft, Elgin, President Illinois Dairymen's Association.

On motion D. R. McMaster, of Sparta.

The Secretary was instructed to present the papers to the Secretary of the State Board of Agriculture and request their publication in the annual report of the department.

Motion Mr. Davis carried,

That the chair appoint a committee of five to nominate officers for the ensuing year.

Chair appointed Messrs. L. B. Parsons, John Virgin, John Gordon, J. H. Pickens and Henry Tunnison.

The committee retired, and after consultation, returned and presented a report, which,

On motion of Mr. Ellis,

Was received and the committee discharged.

Motion D. R. McMasters carried,

That the nominations be considered separately.

The following gentlemen were elected to the several offices named for the ensuing year, as per report of committee, to-wit:

President, D. B. Gillham, Upper Alton, Madison county

1st Vice-President, L. B. Parsons, Flora, Clay county.

2d Vice-President, John M. Gregory, Champaign, Champaign Co.

3d Vice-President, John Lake, Rockford, Winnebago county.

Secretary, Charles F. Mills, Springfield, Sangamon county.

Treasurer, George W. Davis, Carrollton, Greene county.

Executive Committee: John Gordon, Lynnville, Morgan county; John Virgin, Fairbury, Livingston county, and George P. Weber, Pawnee, Sangamon county.

Motion John Virgin carried,

That the Secretary be instructed to send the agricultural associations in the state, copies of the constitution and by-laws, and request their hearty co-operation in the work of the union.

Motion of J. H. Oakwood, of Catlin, carried,

That the President and Secretary and Executive Committee, be instructed to prepare a circular to be sent to agricultural fair associations in the state, recommending a better distribution and more uniform classification of premiums for fairs.

Adjourned, subject to the call of the executive committee.

CHARLES F. MILLS, Secretary.

D. B. GILLHAM, President.

COMMUNICATION SENT COUNTY FAIR ASSOCIATIONS BY THE OFFICERS OF THE ILLINOIS AGRICULTURAL UNION.

ILLINOIS AGRICULTURAL UNION,
SPRINGFIELD, Ill , January 31, 1879.

Officers of County and District Fair Associations of Illinois:

At a meeting of the Agricultural Union of this state, convened in this city on the 22d inst , the following constitution and by-laws were adopted, and the secretary was instructed to send a copy of the same to each agricultural association in this state, requesting their co-operation in making the organization most effective.

It is believed that the time has come to combine and concentrate the power of our local associations for the general good.

The object of this organization is the promotion of the agricultural interests of the state of Illinois

The State Board of Agricultural, and the local associations now existing in nearly every county, are productive of incalculable good, but it is believed that a union of these, through delegates chosen to a state organization may increase their usefulness by a concentration of opinion and power not otherwise attainable

Other occupations very wisely have not only local but state and national unions to promote their interests, and why should not agriculture; lying as it does at the foundation of all-the source of the success of all-the life of material prosperity and national power.

Unless the husbandman meets with the due reward of his labor, banking ceases to be profitable, manufactories are idle, railroads unproductive the wheels of commerce move slowly, and all business languishes

While there are varied interests, each demanding due consideration, yet Illinois, the fourth state in the union, is chiefly an agricultural state, and with regard to its great future still in its infancy To protect, develop and promote this great interest is of primary importance to every citizen. To this end it is of moment that each section and county brings to its aid the experience of all others, producing a combination of the knowledge and judgements of each, a union of the power of all in securing the results of united conclusions

While the most rigid exclusion of political subjects and partisan objects is intended and while an improvement in the mode and results of agriculture is the primary object, yet if to secure these additional legislation is essential, it is expected that the influence and power of the association will be given to such end Claiming no superiority, we seek equality in proportion to the interests involved and a just regard therefore No more, no less.

It is expected to elicit views and opinions by local discussions, and the results to be transmitted to the state union by the delegates sent there

To secure this, it is proposed to publish, some months in advance of annual meetings, various subjects to be considered as for example:

Various kinds and modes of agriculture

The management of county fairs

The protection of stock from infections, and other diseases, from dogs and wild animals.

The development of the dairy interest and its protection by proper inspection laws

The subject of drainage and fencing

Public roads and the most efficient mode of working them

Our agricultural schools and the State Board of Agriculture, with suggestions for increasing their usefulness.

It is believed the ends to be secured are of so great importance as to demand the earnest consideration of all the associations in the state, and your agricultural board or society is earnestly requested to express, by resolution, the sentiment of the board concerning the organization, and to forward such resolution to the undersigned as soon as convenient after the first meeting of the directors of your board or society.

Very respectfully,

CHARLES F MILLS,
Secretary Illinois Agricultural Union

D B GILLHAM, President

ADDRESS OF THE ILLINOIS AGRICULTURAL UNION TO COUNTY FAIR ASSOCIATIONS.

ILLINOIS AGRICULTURAL UNION.
OFFICE EXECUTIVE COMMITTEE,
SPRINGFIELD, February 10, 1879.

Officers of County and District Fairs of Illinois:

The undersigned were instructed to embody ina circular the expressed views of the Union in regard to the successful management of Fairs, which briefly noted below

RULES AND REGULATIONS.

The rules and regulations of the State Fair, under the supervision of the most intelligent and experienced Fair managers in the State, have been carefully revised and improved from time to time during the last twenty-seven years, as the rapid development of our various resources made it necessary

These rules and regulations so nearly meet all the requirements of district and county Fairs that they are earnestly recommended for your consideration and adoption. A large number of the most successful Fairs in the State are working under the rules suggested and the advantage and benefit to all Fairs in the State of uniformity in all practical matters is so apparent as to require no argument.

CLASSIFICATION OF PREMIUMS.

There is now so much uniformity in the classification of premiums by the county and district Fairs in the State that it may seem hardly necessary to call attention to this matter.

The secretaries of county Fairs have found it so convenient to follow the excellent classification noted in the report required annually by the Department of Agriculture, and as saving so much labor in the preparation of annual reports, that the following classification may be said to be the rule throughout the State, so few are the exceptions, to-wit: Class A, cattle; B, horses and mules; C, sheep; D, swine; E, poultry; F, mechanic arts; G, farm products, H, horticulture and floriculture; I, fine arts; K, textile fabrics; L, natural history; M, military prize drill; N, education; speed ring; miscellaneous

The great convenience of a uniform classification to the many large exhibitors who make a circuit of the Fairs each year with live stock, machinery, etc , is one of the many arguments advanced by the advocates of uniform classification of premiums and management of the agricultural organizations of the State

DISTRIBUTION OF PREMIUMS

The proper distribution of premiums occasioned considerable discussion, and various opinions were advanced by members of the Union The prevailing sentiment was in favor of encouragement by offering as liberal premiums as practicable to all objects that are calculated to advance the best interests of the producer, manufacturer, and all interested in the promotion of domestic, fine and liberal arts The exclusion from our agricultural exhibitions of all gambling devices, demoralizing side shows, or exhibitions of any kind not in keeping with the legitimate object of an industrial exhibition

The educational influences of Fairs are of prime importance, and few intelligent managers thereof fail to appreciate their true object or to permit the sensational features to have precedence for the sake of revenue to provide funds for larger premiums in the several departments The testimony of prominent exhibiters is to the effect that their first object in showing at our fairs is to advertise their stock, machinery, etc —and that the premiums seldom more than cover expenses The amount of premiums offered is not of such great importance to exhibiters as the equitable distribution to all the recognized breeds of stock, and all such articles as deserve encouragement, which may properly be exhibited at our fairs

The recent report, (Vol 15, page 419) of the Department of Agriculture, gives some valuable suggestions and statistics in reference to the distribution of premiums, which is given herewith

"The proper apportionment of premiums to the several classes of live stock and other departments in proportion to their importance in advancing the agricultural interests is the most responsible and difficult duty imposed upon the managers of county agricultural fairs As an aid to the better distribution of premiums a table was published in the previous report of this board giving an average for the 93 fairs held in the state in 1876, of the number of entries, amount of premiums offered, and paid to the several departments

This table has been of benefit to agricultural organizations in making up their premium lists, and has resulted in a much better distribution of premiums with some societies that had heretofore encouraged specialties at the expense of the other interests to be fostered A similar table giving the average for 94 fairs held in this state the present year is published herewith and when compared with that of the previous year shows a more equitable distribution of premiums and a larger number of entries

The averages of the fairs for 1866 and 1867, making a total of 187 exhibitions, furnish a much better basis for the proper distribution of premiums than that heretofore published

It will be seen from the foregoing table that for every $1,000 offered as premiums, the several classes have received the following amounts, viz.: Cattle, $170; horses, $190, mules and asses, $25, sheep, $45; hogs, $90, poultry, $25; mechanic arts, $45; farm products, $50; horticulture and floriculture, $55; fine arts, $25; textile fabrics, $50: speed ring, $225; equestrianism, $5 "

Respectfully submitted

D B GILLHAM, Pres., Upper Alton,
JOHN GORDON, Lynnville,
JOHN VIRGIN, Fairbury,
GEORGE P WEBER, Pawnee,
Executive Committee.

CHAS F MILLS Secretary.

MINERAL RESOURCES OF ILLINOIS.

By Prof. A H. Worthen, Ex-State Geologist

In a state like Illinois, possessing a comparatively level surface, no where rising into mountainous elevations, and only locally varied by hill and dale; with a soil of unexampled fertility, adapted to the growth of all the fruits and cereals of a temperate climate, and where one can travel for a hundred miles in almost any direction away from the main water courses without meeting with a single outcrop of rock of any kind, the casual observer would be very apt to conclude that no mineral wealth could be found; as it has been a generally accepted conclusion in the popular mind, that the mineral wealth of the world was mainly restricted to such portions of the earth's surface as were too broken and mountainous to be of any value for agricultural purposes.

But later investigations have shown the fallacy of such conclusions, and the published results of the geological survey have shown, that no state in the Mississippi valley surpasses our own in the extent and value of its mineral resources; for notwithstanding the apparent scarcity of geological outcrops in the state, in reality the whole series of paleozoic rocks from the middle of the calciferous group of New York, to the upper coal measures of the Mississippi valley are here represented, including an aggregate thickness of over four thousand feet, which may be thoroughly studied in all their details in the bluffs of the Mississippi, the Illinois, the Wabash and minor streams that traverse various portions of the state.

Although possessing no immense deposits of iron, such as are found in Missouri and Michigan, we have instead the largest coal field of any state in the union, without which these iron deposits would be comparatively valueless, for it is a well known fact that a large portion of the iron products of both the states above mentioned are smelted with Illinois coal, and this must continue to be the case for the reason that our coals are more easily accessible to the iron regions of both Michigan and Missouri than any others; and, with the improved Seaman process of smelting iron, by which the old objection to the use of the Illinois coal for this purpose, namely the presence of too much sulphur in the coal is obviated, our coals become as useful to the iron master as the Pittsburg coal of Pennsylvana, or the block coals of Indiana.

The geographical extent of the Illinois coal field may be stated in round numbers at about 35,000 square miles, an area nearly three times as large as that of Pennsylvania or Ohio, and equal to about one-fifth of the entire coal producing area of the United States, throwing out of the account the lignite basins of our western territorys.

The carboniferous system of Illinois embraces an aggregate thickness of about three thousand feet, and may properly be divided into upper and lower coal measures and lower carboniferous limestone. The latter division consists mainly of limestone with intercallated beds of sandstone and shale, but contains no coal of any value. A thin seam ranging from two to eight inches thick, has been found in

the Chester group, the upper division, of the lower carboniferous series, and this is the earliest indication that we have, of the conditions required for the production of coal; and the sandstones and shales of this group abound at some localities with the remains of coal plants similar to those of the true coal measures, and good specimens of Lepidodendra, Sigillaria and Stigmaria have been obtained from them in Pope and Randolph counties.

Thus the Chester group shows a gradual transition from the marine limestone producing sediments of the lower beds, to the plant bearing conditions of the true coal measures, for although the limestones of this group like those below, abound in marine fossils, and are evidently of marine origin, having once been muddy sediments in the oceans bed, yet the shales and sandstones that form a considerable portion of the upper division of the group, and contain the remains of land plants in abundance, indicate the near proximity of the land, and also climatic conditions similar to those prevailing during the coal period.

The term *coal measures* is applied to that part of the carboniferous system that contains the productive coal beds These measures consist of sandstones shales, slates and thin beds of limestone, the whole aggregating a thickness of fourteen to fifteen hundred feet in the center of the coal field, and contain sixteen seams of coal ranging from a few inches to nine feet in thickness They may be properly divided into upper and lower measures, the line of division being a bed of limestone known as the Carlinville or Shoal creek limestone. It overlays coal No. 9, and although not usually more than four to six feet in thickness, it is one of the most presistent limestones to be found in the coal measures. The heaviest and most productive coal seams are found in the lower measures, and comprise coals numbered one to seven inclusive, reckoning from the bottom of the series upward These seams range from two to nine feet in thickness, and in them the principal productive mines of the state are located. Above number seven there are nine smaller seams ranging from six inches to three feet in thickness, with some irregular or local seams of no practical value, making a total of sixteen seams that attain sufficient importance to entitle them to be recognized and numbered as productive beds

In Europe, a coal seam eleven or twelve inches thick, is considered of sufficient value to be mined in the usual way by under-ground drifting, but in this country seams less than eighteen to twenty inches in thickness are generally neglected, except where they can be worked on their outcrop by the process of stripping. In the published volumes of the geological survey, our coals have been numbered from the bottom of the coal measures upward, and I will now proceed to notice them briefly in the order in which they occur.

No. 1, or the lowest productive seam in the Illinois coal field, is the "Battery-rock" coal in Gallatin county, the Seaville coal of Fulton county and the Rock Island coal of the Rock-river valley. Its usual thickness is from two to three feet, but on Rock river it averages nearly five feet, and affords a coal of good quality, and locally, as at Seaville, the product is a semi-block coal, which at Avon, in the northwest corner of the county, becomes a true cannel coal. The seam at Avon is only about fourteen inches thick, and in 1859 was extensively worked and the product used for the distillation of coal oil. Ten retorts were then in operation at this point, producing thirty gallons of oil from a ton of coal, but the subsequent development of the

wells of Pensylvania rendered the business unprofitable, and the mines were soon abandoned.

This seam usually has a good roof composed of bituminous shale and limestone, and the entire thickness of coal can be removed with ease and safety. Sometimes the seam is divided by a parting of sandy shale or sandstone, which diminishes its value, the divisions being two thin to be mined separately, while they are too widely separated to be worked together.

No. 2, is a very valuable coal, though seldom attaining a thickness of more than four or five feet, and sometimes running down to one and a half or two feet. This is the Murphysboro coal of Jackson county, the Colchester coal of McDonough county, and the Braidwood and Morris coals so extensively mined on the northern borders of the Illinois coal field. Like No. 1, this is sometimes a double seam, as at Murphysboro, where the upper division is three feet and the lower two feet thick, separated by four to eight inches of clay shale.

The roof of this coal is usually a rather soft clay shale passing up ward into sandy shale and sandstone, and is filled with a variety of fossil ferns in a perfect state of preservation, affording to the fossil botanist a grand herbarium in which the characteristic forms of ancient plant life are most admirably preserved. These shales are also the original repository of the curious iron-stone concretions of Mazon creek in Grundy county, so prolific in fossil ferns, insects, crustaceans, fishes, etc., which have rendered that locality classic ground with the fossil collectors of the whole country.

The product of this seam is a coal of superior quality, and a very large proportion of that mined at Murphysboro, has been consumed in the iron furnaces at St. Louis. It is freer from sulphur than the average of western coals, and consequently better adapted for use in its raw state for smelting purposes.

No. 3 is a very uncertain seam in Northern Illinois, its place often being filled by bituminous shale, and hence it becomes of only local importance. Its usual thickness is about three feet, and when well developed affords a coal of fair quality.

No. 4, like the preceding, is a somewhat irregular seam in its development, especially in the northern portion of the state. In Gallatin and Saline counties it ranges from two to three feet in thickness, but is generally neglected for the thicker seams that overlie it. One of the seams now worked in Fulton county appears to belong to this horizon, and ranges from four to five feet in thickness.

No. 5 is one of the most persistant and therefore most valuable of all our Illinois coals, and is more extensively mined than any other in the state. It generally ranges in thickness from four to six feet, but locally runs up to eight or nine feet of solid coal. In the vicinity of Springfield there are six shafts, all working this coal, and along the line of the Alton and Chicago railroad between Bloomington and Brighton, it has been found at every point where shafts have been sunk to the proper horizon. It is also extensively worked in all the counties bordering the Illinois river from LaSalle to the mouth of the Sangamon river. It will yield from four to six million tons of coal to the square mile, and probably will be found covering an area of at least twenty thousand square miles within the borders of the state. In the central portion of the coal field, it is too far beneath the surface to be available just now, in consequence of the heavy cost of opening

mines at so great a depth, but the time must come in the near future, when a coal seam six feet in thickness, and within a thousandfeet of the surface will be considered well worth the expenditure of capitol required to reach it. At Centralia the coal is found at a depth of 576 feet, the deepest shaft now in operation in this state. This seam is not only very persistent in its development, but has usually an excellent roof consisting of a hard bituminous shale from one to three feet in thickness, overlaid by a hard limestone, which renders the working of the mines comparatively safe.

No. 6 is somewhat irregular in its development, but affords an excellent quality of coal, resembling in some respects the product of No. 2. In Fulton and Peoria counties its usual range is from four to five feet in thickness, but it is frequently interrupted with clay slips or "horsebacks," as the miners term them, which are occasioned by the sudden pinching out of the coal and its replacement with clay or shale. In Gallatin county this seam is only about thirty inches thick, but affords coal of superior quality that appears to be sufficiently free from sulphur to be used for the reduction of iron ore by the ordinary method.

Coal No. 7, is one of the thickest seams in the state, but is not so persistent in its development as some of the lower seams. It is the upper seam at Bowlesville, and Equality in Gallatin county, where it ranges from five to seven feet in thickness. It is also the main coal at the Danville mines in Vermilion county, where it averages about five feet, while in Fulton and Peoria counties it ranges from eighteen inches to three feet in thickness. It affords a soft free burning coal, but usually contains more sulphuret of iron or pyrite than the lower seams, which renders it unfit for the forge, or for the reduction of iron ore by the ordinary process. In its more northerly outcrops in Fulton and Peoria counties, its product is comparatively free from impurities, but the seam is there too thin to be worked to advantage at the present low prices for coal. This completes the list of what may be termed the main productive coal seams of Illinois, although several of the upper seams attain a thickness that give them considerable local value. No. 8 is the small seam outcropping in the vicinity of Springfield, and on the Sangamon river at Howlet, where it ranges in thickness from eighteen inches to two feet, and was worked in a limited way to supply the local demand for coal before the opening of shafts to the main coals below. Its product is much inferior to that obtained from No. 5. No. 9 outcrops in the vicinity of Highland, in Madison county, and has been worked to a limited extent for many years. Its thickness is about the same as that of No. 8, but its product is a coal of rather better quality. It is the upper seam of what we have called the lower division of the coal measures.

Passing up into the upper measures we find coals 10 to 13 inclusive are generally too thin to be worked except by stripping the coal of its superincumbent covering in the creek valleys upon its outcrop.

No. 14 is known as the Pana coal, and has been worked at various points along the bluffs of Beck's creek. It ranges from sixteen to thirty inches in thickness. Considerable mining was formerly done on this seam to supply the local demand for coal, but since the construction of the railroads the mines have generally been abandoned.

No. 15 is the Shelbyville coal, and the thickest and most valuable of all the coals in the upper measures. It has been somewhat exten-

sively worked in the vicinity of Shelbyville for many years; and has also been found in Moultre, Effingham, Richland and perhaps some of the adjoining counties on the southeastern borders of the state. It ranges from one and a half to three feet in thickness, and affords a semi-block coal of good quality.

No. 16 is the Nelson coal of Effingham county, and is the highest seam in the state where mining has been attempted in a regular way. It is from one and a half to two feet thick where fully developed, and affords a coal of good quality. This seam has also been opened near Louisville, in Clay county, where it is known as the Lawkins coal.

This brief review of the coal deposits of the state, will enable us to estimate approximately our mineral resources in this single direction, and places Illinois in the foremost rank among the coal producing states of North America.

As the heaviest deposits of coal belong to the lower coal measures as we have attempted to show, it follows as a natural result that in the center of the coal field there is a large area where the best coal can only be reached by deep mining, by shafts sunk to a depth of six hundred to a thousand feet, and as no attempt has yet been made in the state to mine coal at such depths, it follows that there is a large proportion of our coal lands that have not yet been explored at all, and where no mining has been attempted except the working in a limited way of the thin coals of the upper measures. But as the demand for coal increases, and we become more familiar with deep mining operations, these lower seams will be penetrated even at a depth of a thousand feet or more, and the mineral wealth now hidden so deeply in the bosom of mother earth, will be brought to light and made available for man's use.

With such an area of productive coal lands within our own borders, it is eminently proper that the products of our coal mines should hold the first rank in our estimate of the mineral resources of the state; for since the invention of the steam engine, coal has become one of the most important resources of the country, and one of that must be fully taken into the account in estimating the wealth and future prosperity of any people.

It has been aptly said that "coal is to the world of industry, what the sun is to the natural world, the great source of light and heat with their innumerable benefits." It furnishes the motive power of our steam engines on land and water, drives the machinery of our shops and manufactories, warms and lights our dwellings, and brings the iron ores of Michigan and Missouri subject to the fuel resources of Illinois, without which they would remain comparatively valueless. Coal is the fossilized sunshine of by gone ages, stored away in the dark and repulsive mine, to be liberated and utilized as our human needs may demand.

Forty years ago it was generally supposed that our broad prairies must remain forever in their primeval condition, that the want of timber for fuel and fencing would forever impose an insuperable barrier to their settlement and cultivation; but the discovery and development of our inexhaustable deposits of fossil fuel, underlaying nearly two thirds of the entire area of the state, has not only rendered the settlement of our prairies possible, but enables us to send thousands of tons of coal annually to supply the wants of less favored regions.

Although but little was known twenty years ago in regard to our

coal deposits, yet it is a matter of history that the first coal discovered on the North American continent was found in Illinois. As early as 1669, more than two centuries ago, Father Hennipin, one of the earliest explorers of the Mississippi valley, mentions the discovery of coal in the valley of the Illinois river, not far from where the city of Ottawa is now situated, but as this was long before the discovery of steam as a motive power, the importance of the discovery was probably not comprehended by the hardy explorer of what was then but an unbroken wilderness.

So far as I am aware there is no record of the time when, or the locality where the first coal mine was opened in this state; but it was probably the work of the early French settlers either in St. Clair or one of the adjoining counties, as the earlier settlement at Kaskaskia was too remote from any known outcrop of coal to render it probable that they were the pioneers in this work.

In 1810 the coal mines on the Big Muddy river, in Jackson county, were opened, and a flat boat load of coal was that year sent to New Orleans, and in 1822, Gov. Joseph Duncan loaded several boats at this mine for the same market. These are the first coal operations in the state of which any record has been made. In 1867, the estimated product of our coal mines was 1,500,000 tons and since that time it has been steadily increasing, and it is unfortunate that no provision has been made for obtaining reliable statistics in regard to the annual product of so important an industry.

Few of us probably realize the benefits that have already resulted from the utilization of our immense resources of fossil fuel, and yet these resources are but in the infancy of their development. We admire and prize the various products of our manufactories that contribute so largely to our wealth and comfort, and gaze with astonishment at the long trains of cars that speed in all directions over our railroads, distributing the productions of one portion of the country to any other that will afford a profitable market, and enables the traveller to pass from one extremity of the country to another with speed and safety, but the material which furnishes the motive power for these achievements, the black and unattractive product of the coal mine, is scarcely thought of in connection with the important results that its utilization has accomplished.

Our dwellings are warmed and lighted with the products of the coal mine, and yet how few comparatively could give an intelligent answer if questioned as to the manner in which coal has been formed, or the material of which it is composed. And just here permit me to say that our present school system is lamentably deficient in furnishing our children with practical information upon this and all kindred subjects. After spending from five to ten years in the school room, unless the scholar takes up and pursues some special branch of natural science, and this is seldom permitted in the common schools, especially in the rural districts, the boy or girl is as ignorant in regard to the nature or constitution of the things they come in contact with nearly every day of their lives, when they leave the school room at the age of eighteen or twenty years, as when they first entered it. This state of things ought not to continue longer. What right have we to graduate children from our schools as properly educated, who cannot distinguish granite from limestone or quartz from calcite, who cannot tell yellow mica or the sulphuret of iron from gold, or

white mica from silver, who know nothing of the constituents of the soil they tread beneath their feet, or how it was formed; who cannot tell the names of the trees that shade the school house, or of the birds that sing their morning songs and build their nests among the branches. These are the very first lessons that the child ought to receive, and may be lastingly impressed upon the childish memory, even before it is qualified to grapple with the mysteries of the spelling book. But to return from this digression; it is now generally admitted that coal is a vegetable product, and that the growth of the vegetable matter that formed our coal beds took place under conditions analagous to that occurring in the peat-bogs of the present day. *Peat* is bitumanized vegetable matter consisting of mosses and other herbaceous plants, that accumulate under favorable circumstances in low marshes, and are hence called *peat-bogs*, and if a peat-bog should become submerged beneath the ocean, and remain long enough for the accumulation of heavy beds of sandstone, shale or limestone above it, a certain chemical change would take place, and the peat would be transformed into coal.

All the coals of Illinois belong to the group known as bituminous coals, of which we have at least three well marked varieties; first the dry open burning or semi-block coals, such as may be used in the raw state for the manufacture of iron; second the coking coals, or those that melt in the furnace, or as they are sometimes called "fat coals," which can only be used in the iron furnace after they have gone through the process of *coking*, which consists in burning up or expelling the bituminous or gaseous matter; and thirdly cannel coal, which has a more stratified structure, and is more compact and homogeneous in texture, and contains more volatile matter than the others. and is therefore superior to them for the manufacture of gas, but for the fact that it furnishes an inferior quality of coke.

The differences observed in the structure and appearance of these varieties of bituminous coal have resulted from the different conditions under which the vegetable matter accumulated. The furnace and coking coals are supposed to have been formed in marshes some what above the water level, while the cannel coal was formed in the lagoons or open ponds of the coal marshes, where the vegetable tissue after being finely macerated, was accumulated as a carbonaceous mud.

Anthracite was originally a bituminous coal, which, having been subjected to the dynamic laws that have elevated our mountain chains, the heat and other disturbing influences have expelled the volatile matters, and transformed it into a metamorphic coal or anthracite. Where this metamorphism has been carried still further the result is *plumbago*, or black lead, a substance of no value whatever for heating purposes.

From this brief review of our coal resources, it may readily be seen that Illinois has an almost inexhaustible source of wealth, in this most important department of our mineral productions, and if we could today exchange our coal beds for the gold mines of California or the Black Hills, or for both combined, we should lose immensely by the operation. There is no other mineral product known to man, that tends so generally to the advancement of human industry and general prosperity as coal, and when found in such abundance, and spread over so wide an area as it is in this state, the benefits that must ultimately result from its use can hardly be over-estimated.

Next in importance to our coal mines we may consider the lead deposits of Illinois. There are two distinct areas in the state where productive lead mines have been opened, the Galena lead region of northwestern Illinois, and the Hardin and Pope county mines in the vicinity of the Ohio river.

The northwestern lead region of which the city of Galena is the commercial center, is familiar to all acquainted with the early history of the state, the mines having been opened as early as 1827, and they have continued to be worked with varied success up to the present time. The ore is a sulphuret of lead or *galenite*, and contains about 85 per cent. of metalic lead, and 15 per cent, of sulphur and other impurities. It occurs in the Trenton group of the lower Silurian system, and the rock in which the main body of ore occurs is known as the Galena limestone. It forms the main portion of the hills about the city of Galena, and throughout the county of JoDaviess, and is also found in Stephenson, Carroll and Boone counties.

The mineral occurs in crevices, pockets and caverns in the limestone, and is sometimes sparingly interspersed through the body of the rock. The deposit known as *sheet ore* is a solid mass or sheet of *galenite* filling a vertical fissure in the rock usually only from a fraction of an inch to two or three inches in thickness, and extending to the length of a hundred yards or more. More frequently the crevices are widened out by the decomposition of the exposed surfaces of the fractured limestone, and form openings or caves in which the ore is often found in large bodies, sometimes adhering to the sides and roof of the cave in crystalized masses, or more commonly imbedded in the soft-brown clays that have been formed by the decomposition of the limestone. Sometimes the crystals of galenite are coated with the sulpheret of iron and form stalactites that hang suspended in the room like stalactites of lime in ordinary limestone caves.

No true veins have been found in this region, and the ore deposits probably do not extend below the base of the Trenton limestone, and very few of the mines in this region exceed 150 feet in depth. True veins are supposed to have been formed by some deep-seated cause acting from below, and consequently extend indefinitely downward, whereas the crevices of the Galena limestone have been formed first by the shrinkage of the strata in the process of hardening, and secondly they have been enlarged by the decomposition of the exposed surfaces of the openings. Such being the facts, no considerable amount of capital should be expended in mining below the base of the Trenton group, but all expenditures should be confined within the limits that have been proved to contain productive bodies of ore.

The maximum thickness of the Trenton group probably does not exceed 350 feet anywhere within the lead producing region, and this may therefore be considered about the limit to which prospecting for lead can be carried with a reasonable prospect of success.

The lead producing area of the northwestern portion of the state, probably does not exceed 700 square miles, and is entirely restricted to the counties of JoDaviess and Stephenson. As no statistics of our lead products have been kept, so far as I am aware, I can give no reliable information in regard to the amount of lead annually produced. In 1858 there were five furnaces in operation within the limits of the state, giving an annual product of 8,750,000 pounds of metalic

lead. Zinc ores also occur in connection with the galenite of this region, and of these I will speak more fully further on.

The southern Illinois lead mines occur in Hardin and Pope counties, and belong to the St. Louis Group of the Lower Carboniferous formation. The ore is a sulphuret of lead or *galenite*, similar to that occurring in the northern mines, but occurring here in regular veins associated with fluor spar, calcite, zinc blende, etc,. The ore was first discovered in 1839 in sinking a well just below the village of Rosiclare, on the bank of the Ohio river, in Hardin county, but no attempt at mining was made until 1842, when another discovery of galenite associated with fluor spar was made at another locality in the same vicinity, and active mining operations were soon after commenced. These mines were worked in a crude way for about nine years, when for the want of the necessary capitol and skilled labor necessary to success, the work was temporarily suspended.

Subsequently the property changed hands and mining operations were resumed, the old shafts were deepened and new ones sunk, and active mining operations were carried on up to a very resent period, when the work was again suspended. The principal vein worked in the vicinity of Rosiclare averages nearly eight feet in width and is filled with fluor spar and calcite, with the sulphurets of zinc and lead disseminated throughout the mass. The product of the Fairview company the first year after re-opening the mines was reported at 176.387 pounds of lead, nearly all of which was taken from a single shaft. The lead produced at this mine according to the analysis of Dr. Theodore Weiss of St. Louis, assayed 266 grains of gold and 532 of silver to the hundred pounds of metallic lead.

One of the important products of these mines is the *fluor spar* that occurs in great abundance, and forms the *gangue* in which the mineral is embeded. This is in constant demand as a flux for reducing the refactory ores of Colorado and Utah, and is also used in the manufacture of fluoric acid. It can be furnished by these mines in any desired quantity, and with proper facilities for transportation, this product alone could be made to pay the entire cost of working the lead mines of this country.

At Lead Hill about seven miles northeast of Elizabeth, a well defined vein of fluor spar carrying galenite has been discovered and considerable mineral has been taken from it without any attempt to work it in a systematic way. At several other points in this county, and also in Pope, well defined veins of fluor spar have been discovered, but nothing has as yet been done towards their development.

Zinc, in the form of a sulphuret, is even more abundant at some of these mines than lead, and if some economical process should be discovered of converting this variety of ore into metallic zinc, this might become an important branch of mining industry. The great draw-back to the successful development of the mineral resources of this portion of the state, is the want of cheap and reliable means of transportation, for although the mines are in near proximity to the Ohio river, this affords but an uncertain outlet for its mineral products and often fails to afford the needed means of transportation when the necessities of the miner are most pressing.

Zinc, as we have already said, occurs with the lead ores both at the northern and southern mines. In Hardin and Pope counties it occurs only in the form of a sulphuret, but in JoDaviess and the adjacent

region of Wisconsin, it abounds both as a sulphuret and corbonate, the latter being the mineral known among the miners as "dry bone" from its cellular bone-like texture. It is quite variable in its productive qualities, the ananlysis showing all grades of richness from 5 to 47 per cent. of carbonate of zinc. For more than thirty years these ores of zinc were thrown into the waste heaps as worthless throughout the mineral region, until 1859 when Mr. Robert George erected a small furnace near the the town of Mineral Point, and commenced the reduction of the zinc ores, using the LaSalle coal for that purpose, but the cost of transporting the fuel was found to be too great, and the experiment did not prove a success financially, and was soon abandoned.

In 1858, Messrs. Matthiessen and Hegeler established a furnace for smelting zinc at LaSalle, to which a rolling mill for the production of sheet zinc was added in 1866. The capacity of their furnace is about 8,000,000 lbs. of spelter per annum, and both varieties of ore are used by them, their main supply coming from the lead region of northwestern Illinois and Wisconsin.

The establishment of these zinc works at LaSalle is but another example of the value and importance of our coal deposits. It is cheaper to transport the mineral to the coal than the coal to the mineral, and hence LaSalle, because of its coal deposits, has become one of the principal points for the production of metallic zinc in the Mississippi valley. The same rule holds good in the production of iron, and most of the iron works now in operation in Illinois obtain their supplies of ore from Michigan and Missouri.

A good deal of yellow copper ore has been found associated with the lead ores of the northwest, especially in Wisconsin; but no deposit of this kind has yet been found in Illinois of any productive value. The isolated masses of native copper that are frequently met with in the clay and gravel beds of this State, do not properly belong here, but have been transported by ice and water from the copper region of Lake Superior.

Iron ores abound in many portions of the State, and two furnaces have been erected in Hardin county for smelting the ores that occur in that vicinity. The Illinois furnace, situated on Big creek, in Hardin county, five miles north of the Ohio river, was erected about the year 1837, and was rebuilt and enlarged in 1856 and continued in operation until the breaking out of the rebellion, in 1861, when the business was suspended.

Martha furnace, three miles northeast of the former, was built in 1848, and continued in operation until 1857, when it also suspended. Both these furnaces smelted the same kind of ore, a hydrous per-oxyd of iron that yields on analysis 56 per cent. of metalic iron. The smelting was done with charcoal made from the timber of the adjacacent region, and the original growth of timber has been consumed over a large area to furnish the needed supply of fuel for these furnaces. The ore occurs in irregular bunches scattered through the brown clays overlying the carboniferous limestone, which is the prevailing rock in this portion of the county, and also in the crevices of the limestone itself where it was probably deposited by chalybeate springs. Two difficulties seem to interfere with the profitable working of the mines at the present time, namely, the increased cost of charcoal from the consumption of the timber on all the adjacent lands, and the uncertainty of procuring a regular supply of ore at a moderate cost

The former difficulty might be overcome by substituting an improved furnace for the one now in use, and the use of bituminous coal for charcoal, and the latter by the use of a different ore to that heretofore used, which may be found in regular beds a few miles distant from the present site of these furnaces. On the Glengarry tract some four or five miles from the Illinois furnace, an extensive body of ore exists which has been opened at several points, showing a solid face of ore from 3 to 10 feet in thickness. A good deal of this ore has been mined and hauled to the Ohio river for shipment, but no attempt has yet been made to smelt it at home.

This great body of iron ore is awaiting the necessary capital and enterprise to be developed into a valuable mining industry, and one that would tend to materially increase the wealth and prosperity of the county. There are also some other bodies of iron ore in the same vicinity that, from the partial examination that has been given them, promise a sufficient amount of ore of a fair quality to justify the erection of a furnace for their reduction. These iron ores all belong to the class known as hematites, and yield an excellent quality of pig-iron. They are found associated with the lower carboniferous limestones, or with the conglomerate that lies at the base of the coal measures.

Bands of carbonate of iron, another valuable ore, abound in the coal measures in various portions of the state, and although no systematic attempt has yet been made to work this kind of ore, yet there is no doubt but some of the deposits already known might be worked to advantage at the present time, especially where they occur in near proximity to workable beds of coal. This variety is commonly known as "kidney ore," and occurs in regular layers or bands from an inch to a foot or more in thickness. Sometimes several bands occur together, separated by only a few inches of shale, and where they aggregate a thickness of a foot or more, the quantity thus afforded would justify the erection of a furnace, especially where a supply of coal could be obtained without transportation. Several such deposits are already known in the state, and others will no doubt be discovered hereafter. These kidney ore beds may be worked by stripping where the beds lie near the surface, or by tunneling into them horizontally where they outcrop. In many cases this ore assumes a compressed spherical form, and tumbling down from hillsides where they outcrop, it may be gathered by the ton along the ravines by which the shales are intersected.

In Scotland, according to the late Dr. D. D. Owen, a band of good kidney ore 4 inches thick is considered sufficient to furnish ore for a moderate sized furnace, while here we have many localities where the ore is from 8 to 12 inches in thickness, and yet no attempt has been made to utilize it in the production of metalic iron. With an unlimited supply of fuel, and the present low price of labor, it seems as though our iron ores should all be utilized, and the iron products obtained as cheaply here as in Scotland, or anywhere else in the civilized world. Limestone for flux is abundant and may usually be found in close proximity with the iron ores, costing only the labor required for quarrying and transporting it to the furnace.

Such, in brief, is a review of our resources in the way of coal and the metalic ores, and if I should go on to speak of our building stones, marbles, freestones, limestones for lime and cement, fluor spar,

potter's clay, fire clays, porcelain clays, etc., I should be compelled to extend this paper far beyond the limits usually assigned to an evenings lecture, and must therefore reserve the continuation of this subject for a future occasion.

With such mineral resources at our command, would it not be in accordance with a sound policy on the part of our state government, to make some permanent provision for ascertaining the annual products of our mines and quarries, either by establishing a mining bereau or the appointment of a competent commisssoner whose duty it shall be to ascertain the amount and value of our mineral products, and such other information as may be of public interest, and prepare the results for publication either in connection with the reports of the State Agricultural Society, or in such other manner as the general interest should require.

The published reports of the geological survey of the state accomplished something in this direction, but since that work was suspended, no provision has been made for obtaining even the statistics of our coal products, or for collating and publishing the information which might readily be obtained, through the private enterprises undertaken in various portions of the state for the development of our mineral resources. It is surely unnecessary for me to go into an extended discussion of the advantages to be derived from the thorough development of these resources, before an audience like this, composed largely of the intelligent cultivators of the soil, for you no doubt fully realize that one of the things most important to the farming interest is a good home market, especially for such of your products as are liable to perish by transportation, and every mining and manufacturing enterprise undertaken and successfully prosecuted, will furnish such a market, and add materlally to the value of the farm products of the surrounding country, and consequently to the wealth and prosperity of the farmer.

The varying of our industrial pursuits will also tend to settle in a peaceful and satisfactory manner, the labor question now pressing for a solution, and threatening our peaceful common-wealth with anarchy and bloodshed. We connot all subsist by the cultivation of the soil, because the products of the mine and the quarry are indispensable to the comfort and well being of all civilized nations, and the more deversified our industrial pursuits become, the greater will be the happiness and prosperity of the people. The best interests of the entire community can only be promoted by the full development of all our natural resources, and any government that discriminates in favor of one branch of industry to the prejudice of others equally important, fails in its duty to the whole, and is unworthy of the enlightened age in which we live. We are bound together by a fraternal bond that we cannot sever if we would, and recognizing the common origin and destiny of the race, a true self interest should dictate the establishment of just and equitable laws for the development of all our social and industrial interests, that the condition of the toiling millions may be improved, and the standard of humanity elevated, until each individual shall attain to the complete unfoldment of all the intellectual, moral and spiritual attributes of his being.

INCIDENTS AND ACCIDENTS ON THE FARM.

By N H Paaren, M. D , V S., Chicago

(Veterinarian Illinois State Board of Agriculture)

Among the haps and mishaps on the farm, there can scarcely be anything more provoking and discouraging to the breeder than to witness the summary destruction, by the breeding sow, of her newly born pigs. After a short discussion of this subject, we will devote a few words to the subject of scab in sheep.

SOWS EATING THEIR PIGS.

It is a fact that sows do sometimes commit infanticide, and that, too, in true cannibalistic manner. It has occured to us as a peculiar feature, that the colder seasons of the year seem to favor the development of this state of temporary or emotional insanity; at least we do not remember that our attention has been called to it during the warmer season or the hotter months of the year. A sow, which up to the time of farrowing was apparently healthy, will, with a good deal of ceremony accompanying the act, take to eating her afterberth, and next her pigs, either in great haste immediately after they are born, or during the first or second day, in spite of the lamentable cries of the young ones. If the litter is a large one, she may not devour all the pigs. She will often leave a few, or at least one or two. While the sow is devouring her pigs, she generally behaves very wildly. She is excited, violent, and acts as if she was crazy; rummaging her bedding around, rooting in the ground, looking around with wild and savage glances; and while she is in this state of excitement, it is difficult and sometimes dangerous for any one to interfere in behalf of the young pigs. The hither-to gentle and quiet breeding sow appears to know you no more, nor to care about your pecuniary interests in the transaction, and she may even attempt to attack you as furiously as she does her own offspring. This state of excitement will often exist during a few days, and gradually abate.

There is no certainty as to the cause or causes of this very unnatural disposition. Most likely this predominent desire for animal food is due to a disorder of the sympathetic or visceral system of nerves (*systema nervorum ganglionica*). This temporarily deranged state has been compared with the state of whimsical hankering, sometimes evinced by women during pregnancy. But it has been observed that the desire for eating their young ones has been developed or induced by previously allowing the sows to feed on raw animal food, such as offal from slaughtering, or carcases of dead horses, cows, etc. However, it is not less likely that the sensation of vacuity, or emptiness, immediately succeeding the act of parturition, may produce the derangement of the nervous system above referred to. Confinement in small styes, is another supposed cause. The desire to devour the young

pigs appears generally within the first three or four days, rarely later. Generally when the sucking is fairly started, the desire gradually diminished or disappears.

Several devices have been employed with more or less success, for the purpose of preventing the mother from eating her offspring. In order to satiate her unnatural appetite in a harmless way, it has been suggested to give the sow some raw pork to eat, or some horse flesh, or a good supply of entrails of sheep or of some other animal. This, however, is questionable policy, and is unnecessary, if the young are removed immediately after their birth, and the treatment which we shall reccommend is adopted. That the desire for flesh may not be excited, the afterbirth should be removed as soon as it is expelled; and the slime covering the young pigs should be wiped off, as any rough licking by the mother may wound the young ones, and cause bleeding, which, if started at the navel, might become continuous, and probably incite devouring of the pigs. To save the young ones from danger, they may during the first few days be kept separated from the suspected mother, and allowed to suck at intervals of three or four hours, while being watched. If, during the second or third day, the behavior of the sow is quiet and natural, the pigs may be left with her; but, nevertheless, watch should be continually kept over her during a day or two; for it may happen that a relapse will occur. This will be best prevented by giving her a plentiful supply of gruel.

By way of remedial treatment, such medicines may be employed as would produce a state of nausea, and whereby all feeling of appetite would be disturbed. This may be accomplished by administering from five to eight grains of tartar emetic and twenty grains of powdered root of white hellebore, in a little milk, as one dose, immediately after parturition, and repeating the same an hour or two thereafter. Similar doses may be administered the next day. As an additional precaution some tincture of colocynth, or tincture of aloes, may be rubbed along the neck and back of the young pigs. These tinctures are very bitter, and will disgust the sow. In the absence of these, a similar application of kerosene may be made, though this alone may not prove certain of prevention.

Because a sow has once devoured her litter of pigs, it is not certain that she will do it the next time, and it is therefore not necessary to discontinue her as a breeding sow, if she is otherwise a very desirable animal. But her having once or twice evinced this unnatural appetite, suggests the adoption of precautionary measures in the future; and for this purpose it will be indispensable to note the exact time when she will be due in farrowing. Sows that have reared several litters successfully may devour a following litter, while sows that destroyed their first and second litter, or both, may never do so again.

SCAB IN SHEEP.

Want of space prevents a detailed description of this disease. Presuming that its eradication is of paramount interest to those who by force of circumstances have become sufferers from the presence of this troublsome disease among their flocks, our remarks will be confined to its cure.

Various remedies are recommended for the treatment of this disease; but we would caution against the use of such as contain arsenic, and no less against mercurial preparations, as they are dangerous to the life of the sheep. Efficacy considered, tobacco forms the cheapest dip. For one hundred sheep, take twenty-five pounds of coarse tobacco, and steep it in as many gallons of boiling water, just taken from the fire. Stir it occasionally until it is cold, when it should be strained. Add to this fluid so much cold water as to make the whole quantity one hundred gallons. It is not necessary to add soft soap; but the addition of six pounds to the above quantity of fluid, would undoubtedly enhance the efficacy, by facilitating the losening of the patches of scab. The soap should be dissolved in a sufficient quantity of warm water, and added to the strained liquid, before the cold water is added; and the whole compound should be contained in in a large tub, in which each sheep should be dipped during three to four minutes by two men, one of whom holds the head above the surface, to prevent the sheep from swallowing any of the poisonous fluid. The sheep should then be lifted out and laid on its side on an inclined plane of boards, or better, on a door, which should be connected with the tub, so that the fluid, wrung out of the wool, is not lost. While laying on this plane, the head of the sheep should be thoroughly wetted with the fluid. The sheep should then be turned into a clean fold, and subsequently be kept on a new pasture, off from their former grazing ground or usual habitations, during at least three months. It will be necessary to repeat the dipping on the eighth or tenth day, because the scab remedies do not destroy the vitality of the "nits," which hatch out in the course of a week. The second dressing, properly done, will then effectually cure the disease. But for security sake, look the flock over again after a week's time, and be sure to dress any one separately that rubs, or it will soon be all through the flock again.

In dipping sheep, a warm day should be chosen, and the sheep should be kept warm and on dry bedding during the following night. Scabby sheep should be shorn as soon as the weather is warm enough; they are then less trouble to dress. The lambs will take the disease from the mothers when a few days old. Great care should be exercised in introducing new sheep into a flock. Every newly purchased sheep should be thoroughly examined, before being allowed to mix with the flock on the farm; and it is well to enquire into the provious state of the flock from which purchases are intended, as well as the ground on which the sheep are kept. Keep an eye on your neighbors' sheep, in order to prevent possible contamination from that source.

The partial cure of a scabby flock of sheep, is a great cause of the disease being perpetuated on a farm. A scabby flock may appear cured a short time after being treated, and the sheep may be at rest and feeding; but this may depend on the living itch insect having been effectually destroyed, and the eggs or "nits" yet remaining intact. Not only should the sheep be thoroughly dressed and removed to a clean run, but such thorough and lasting disinfectant should be used as would insure the protection of the sheep from scab insects remaining on the infected places, for a period beyond that during which the insect could possibly live in any other situation than on the sheep. Experience has proved the necessity of the employment of a lasting disinfectant, together with the curative; and among other specifics for

this purpose, sulphur has been tried. The properly apportioning the quantity of tobacco and sulphur (one pound of each to five gallons of boiling water), has fairly established the character of sulphur as a lasting disinfectant, when at the same time the curative effects of tobacco are beyond question.

All rubbing places, fences, posts, gates, stones, trees, racks, troughs, in fact, all objects with which the scabby sheep may have been in contact, should be thoroughly washed with the last mentioned disinfecting fluid. All old bedding, offal, manure and worthless woodwork should be burned, as well as loose and detached wool found on the ground and on the objects named.

The treatment of scab in sheep during the winter months, is not very convenient, nor is it likely to be so effectual in its result as in spring and summer. Therefore, if the disease is treated in winter, it will be necessary, or at least safe and proper, to repeat it in spring. The tobacco dip is preferable in the warm spring, summer and autumn months; but in the colder season, or winter, soap and sulphur smearing is preferable. The proportion of sulphur and soft soap would be, by weight, one part of the former to four parts of the latter, to which is added their weight of boiling water, and the whole stirred well together.

There are other remedies as effective in the treatment of scab, and comparatively as harmless, as those mentioned above; and while we are at it, we will mention four more remedies, either one of which is as effective as the others. *Prescription* 1.—One part of creosote, diluted with twenty-four to twenty-eight parts of spirits of wine. *Prescription* 2.—Creosote, one part; spirits of wine, ten parts; water, fifteen parts; mix. *Prescription* 3.—Creosote, one part; lard oil, twenty to thirty parts; mix. *Prescription* 4.—Soft soap, thirty parts; spirits of turpentine, six parts; chloride of lime, two parts; mix. As a rule, the patients are let go from two to four days, when greasy applications have been used, before they are washed. The washing is done with warm water and soap, or with lye and warm water, or with very warm water and vinegar.

A thorough and lasting banishment of scab from a farm necessitates attention to other suppressive and sanitary measures, and which we have already mentioned above. Pastures and enclosed grounds, that have been occupied by scabby sheep, as well as yards and sheds, should be shut off and entirely abandoned during at least two months. Don't forget to look at your neighbor's sheep occasionally; and if you have any reason to suspect the presence of scab amongst them, compel the owner to keep them within bounds, and make him acquainted with the fact that we have a law especially referring to scab in sheep, which makes the owner liable for all damages that may occur by reason of such sheep running lose. Unless great care is bestowed on the curative treatment of a scabby flock, and on cleanliness and disinfection of everything with which they have been in connection, no permanent cure can be established.

AGRICULTURAL STATISTICS.

The last general assembly, fully appreciating the advantages that would accrue to the state by the collection and publication, annually, of complete information as to the amount of the several crops grown in the state, passed a law providing for the collection of Agricultural Statistics, by township and county assessors, when listing property for taxation.

The statistics, while far from being complete, are valuable, and furnish information about important crops concerning which there has heretofore been no data as to the extent of the area or the aggregate yield for the state.

Farmers and others interested in the prosperity of the state will duly appreciate the many advantages of having a complete inventory, annually, of the productive resources of the state, which is possible under the existing law when the producers are fully impressed with the great value of the same and more heartily co-operate with the proper officers whose duty under the law is to collect this important information.

Agricultural Statistics for 1877, *returned by Assessors, May,* 1878.

Counties	Corn.			Winter Wheat			Spring Wheat.		
	Acres	Average yield per acre. in bushels	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels
Adams	99,658	32	3,195,462	57,023	10	563,113	782	10	7,652
Alexander	11,005	31	338,864	4,809	16	76,443	23	11	255
Bond									
Boone	31,071½	31	950,764	195½	8	1,658	1,148	16	18,871
Brown	38,665	31	1,189,920	14,749	11	167,526	99	7	686
Bureau	173,066	40	6,915,718	253	15	3,893	15,556	11	176,068
Calhoun	15 341	24	375,305	13,847	16	221,295			
Carroll	66,185	3	191,714	473	14	6,533	11,466	11	122,614
Cass	50,210	35	1,739,745	9,346	16	153,742	41	11	1,695
Champaign	251,450	26	6,418,082	7,297	13	91,259	371	15	5,596
Christian	162,592	16	2,651,760	11,240½	16	178,328	393	8	2,955
Clark	53,095	22	1,175,344	21,017	12	258 531			
Clay	43,193	13	548,615	12,531	12	151,610	7	10	70
Clinton	51,291	15	750,638	50 967	16	811,237	7	19	132
Coles	90,253	30	2,676 802	7,993	14	109,989	89	20	1,771
Cook	50,080	33	1,655,204	36	19	670	2,695	13	35,780
Crawford	43,233	25	1,061,041	28,092	14	383,385	10	10	100
Cumberland	38,583	18	710,839	10,075	12	116,533	4	6	26
DeKalb	104,460	35	3,605,297	65	15	1,001	6,079	14	85,723
DeWitt	84,846	27	2,282,356	1,443	11	16,475	2,454	9	22,019
Douglas	76,446	27	2,048,372	1,899	15	28,127	259	12	3,238
DuPage	32,606	34	1,108,509	91	14	1,296	2,773	14	38,468
Edgar	114,013	30	3,338,928	14,788	13	198,055	176	17	3,044
Edwards	21,062	20	413,455	15,286	16	237,317	9	23	205
Effingham	46,618	16	767,021	22,286	11	337,080	14	9	125
Fayette	52,325	15	773,074	25,319	13	323,877	14	5	66
Ford	131,489	24	3,160,103	153	10	1,534	323	13	4,303
Franklin	32,454	15	477,991	20,304	12	248,410			
Fulton									
Gallatin	29,494½	29	956 065	10,699	14	147,893			
Greene	58,945	33	1,932,302	35,915	18	658,605	88	17	1,510
Grundy	97,664	31	3,047,716	36	9	326	427	14	5,813
Hamilton	27,998	16	442,481	12,850	11	137,581	41	14	561
Hancock	141,530	23	3,305,351	13,942	11	153,229	1,194	9	10,700
Hardin	9,729	27	264,950	3,671	9	33,758			
Henderson	74,826	30	2,241,190	2,831	16	44,764	3,013	13	39,815
Henry	151 421	49	7,422,161	42	19	791	7,509	15	116,684
Iroquois	270,919	24	6,450,915	846	11	9,295	731	11	8,152
Jackson	23,530	15	363,663	42,867	13	553,055	6	12	72
Jasper	43,433	19	833,995	14,855	14	207,815	1¼	19	23
Jefferson	39,695	12	495,587	25,682	12	306,309	30	9	273
Jersey	37,089	25	912,331	47,131	17	781,759	157	15	2 290
JoDaviess	47,390	35	1,644,531	786	12	9,667	2,851	6	18,368
Johnson	23,004	24	545,458	11,136	12	130,040	½	50	25
Kane	52,847	39	2,087,263	19	21	397	1,511	17	25,534
Kankakee	120,389	31	3,803,547	76	15	1,135	610	14	8,494
Kendall	67,048	37	2,452,041	144	34	4,910	1,266½	17	21,289
Knox	155,060½	32	4 894,359	729¾	17	12,030	5,196½	11	59,715
Lake	27,146	48	1,312,183	28	13	374	1,304	11	14,947
LaSalle	218,108	41	8,737,204	596	19	11,050	8,210	22	180,530
Lawrence	31,693	21	654,289	27,937	14	387,049	47	24	1,106
Lee									
Livingston	285,164	33	9,355,483	91	12	1,116	2,322	14	32,478
Logan	168,627	28	4,769,228	3,976½	16	63,207	1,047	12	12,766
Macon	138 468	24	3,328,746	4,244	15	62,374	491	22	10,856
Macoupin	117,919	20	2,395,811	66,327	17	1,105,207	311	11	3,565
Madison	28,906	28	803,874	96,278	17	1 654,993	22	23	500
Marion	74,977	11	797,098	13,721	14	195,346			
Marshall	78,954	43	3,388,420	352	18	6,383	2,156	12	26,143
Mason									
Massac	71,702	26	451,906	14,135	10	142,035	81	11	342
McDonough	105,028	27	2,868,158	5,145	10	46,954	6,787	10	71,160

Agricultural Statistics—Continued.

Counties	Corn. Acres	Corn. Average yield in bushels per acre	Corn. Bushels	Winter Wheat. Acres	Winter Wheat. Average yield in bushels per acre	Winter Wheat. Bushels	Spring Wheat. Acres	Spring Wheat. Average yield in bushels per acre	Spring Wheat. Bushels
McHenry	55,483	35	1,945,822	61	18	1 128	3,141	12	37,861
McLean	265,770	33	8,674,148	1 961	15	29,255	3,411	15	51,875
Menard	70,246½	24	1,717,448	4,952	13	63 853	458	12	5,773
Mercer	110,738	40	4,461,364	528	15	7 856	7,911	15	117,321
Monroe	18,220½	30	540,937	45,339½	15	700,732			
Montgomery	108,342	13	1,384,618	40 232	16	656,093	69	19	1,325
Morgan									
Moultrie	75,123	6	473 846	2,953	16	47,019	401	10	4,002
Ogle	121,050	33	3 958,855	655	21	13,519	13,397	13	172,139
Peoria	97,163	27	2 634,670	2 379	11	27,220	2,163	11	24,233
Perry	12,404	13	157,595	30,741	12	395,230			
Piatt	105 536	43	4,550,125	2,606	14	35,710	273½	13	3,644
Pike	87,405	33	2,888,802	71,219	14	982,453	66	26	1,688
Pope	26,398	23	619,836	10 530	10	103,808	20	13	270
Pulaski	11,885	28	332,780	11,112	*14	*155,568			
Putnam	28,874	37	1,057,380	136	15	2,074	1,888	14	27,239
Randolph	22,473	22	487,848	72,455	14	982 176	643	15	9,621
Richland	31,417	16	487,266	26,076	11	296 964			
Rock Island	65,251¾	41	2,657,503	74	13	912	5,220	14	70,730
Saline	22,492	22	493,505	8,533	13	111 614	56	18	1,035
Sangamon	170,233	28	4,803,371	13,513	14	187 153	1,067	10	10,993
Schuyler	44,444	29	1,310 340	11,368	12	132 728	683	8	5,155
Scott	34,492	39	1,337,807	16,274	16	267,954	4	17	70
Shelby	102,511	17	1,717,234	17,657	16	291,112	312	14	4,424
Stark	62,906	46	2,882,085	111	16	1,824	1,851	14	26 261
St Clair	44,003	2	101,380	106,929	17	1,779,749	61	18	1,090
Stephenson	77 958	36	2,828,735	1 838	18	33,798	14 334	9	134,672
Tazewell	115,022	30	3,426,505	7,778	17	134,405	2,626	12	31,908
Union	21 173	22	456,121	20 889	14	286 499	289	20	5,692
Vermilion	178,046	25	4,462,860	15 510¼	11	178,314	359½	14	5 107
Wabash	15,817	15	229 775	16,368	17	270,638	41	13	520
Warren	121,371	29	3,582,175	1,963	4	8 335	3,505	12	41,855
Washington	32,203	13	413,556	64,911	12	797,429			
Wayne	51 342¼	13	662,693	16,798¾	12	199,575	27	16	435
White	48,602	25	1,214,9 2	29,702	14	421,863			
Whiteside	119,731	37	4,427,099	206	20	4,194	10,416	14	145,665
Will	132,332	33	4,324,432	112½	21	2,330	1,684½	14	23,069
Williamson	25,149	17	437,333	16,297	11	187,314	273	13	3,548
Winnebago	75,948	28	2,147,866	177	17	2,979	2,645	11	28,697
Woodford	114,923	29	3 368,344	1,112	14	15,248	4,600	13	57,753
Total	7,654,474	28	217,046,190	1,500,680	14	21,377,023	176,058	12 8	2,260,343

Agricultural Statistics—Continued.

Counties.	Oats.			Rye.			Barley.		
	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels
Adams	19,546	23	447 680	910	12	11,085	18	6	117
Alexander	447	14	6,256	15	13	200	..	...	...
Bond	...	...	...	...	..	...	...	...	...
Boone	23 720	39	927,633	3,510	14	49,579	335	21	6 969
Brown	3 127	22	67,652	378	9	3,598	25	11	270
Bureau	33,476	41	1,369,748	3,275	18	58,318	2,193	22	47,949
Calhoun	747	22	16,753	56	24	1,367	..	...	...
Carroll	27,889	41	1,143,780	4,292	15	63,931	5,018	20	100,219
Cass	6 704	33	221,448	716	15	10,656	9	9	80
Champaign	25,850	33	857,619	6,188	15	89 823	94	17	1,637
Christian	11,119	25	275,557	3,521½	13	46,346	91	11	1,038
Clark	5,912	15	86,862	170	11	1,851	..	..	...
Clay	5 403	17	91,756	367	4	1,649	12	4	44
Clinton	13,215	7	305,871	322	14	4,593	10	22	223
Coles	8 959	25	220 635	530	17	8,826	...	...	...
Cook	52 198	41	2,171,028	1,206	16½	22,710	113	1½	2,424
Crawford	2 289	20	45,762	67	11	735	....	..	..
Cumberland	4,871	17	82,796	192	10	1,896	3	11	32
DeKalb	39,976	42	1,692,101	1,009	18	18,180	3,305	18	61,101
DeWitt	10 739	34	366,862	3,804	16	60 216	9	17	1,658
Douglas	7 107	26	182,87	1,407	14	19,693	9	11	102
DuPage	32,092	45	1,445,249	1,598	23	36 688	153	23	3,465
Edgar	9,343	34	314,364	1,313	16	20,746	20	20	210
Edwards	3,888	20	78 618	44½	12	519	...	...	...
Effingham	11,918	20	242,153	440	11	5 062	..	..	...
Fayette	8 099	17	138,406	5 6	12	6,844	1	7	7
Ford	12,893	34	435,698	2 374	15	34,978	22	14	317
Franklin	8,086	24	191,712	51	8	412	6	28	167
Fulton	...	..	...	...	...	...	...	..	..
Gallatin	1,354	21	29,044	3	16½	12	..	...	...
Greene	1,655	30	49 662	197	19	3,735	...	...	...
Grundy	9 752	40	386,595	1,723	16	27,550	47	16	768
Hamilton	4 253	16	69,923	52	8	425	..	..	..
Hancock	22,483	21	472,160	4 079	13	52,055	3	25	75
Hardin	1,446	11	16 445	...	...	...	...	...	...
Henderson	9,200	35	318,080	6,886	15	99 851	9	22	200
Henry	28,622	50	1,425,726	6,573	20	128,562	698	25	17,486
Iroquois	30,269	35	1,004,592	4 245	15	64 594	98	17	1,645
Jackson	4 480	20	91 396	75	12	916	61	26	1,595
Jasper	4,085½	20	82 955	251	12	3,108	...	..	...
Jefferson	6,914	21	144,719	192	8	1,547	5	11	55
Jersey	1,149	22	25,319	82	3	245	...	..	..
JoDaviess	26,175	32	845,013	1,757	16	28,412	438	17	7,387
Johnson	3,174	20	63,103	32	11	354	3	8	25
Kane	28,154	46	1,288 590	2,277	22	50,426	455	21	9,410
Kankakee	30,451	30	910 821	4,081	15	61 906	27	23	619
Kendall	17,005	60	1,017,846	364	19	6,933	221	1	221
Knox	26 326½	35	926 370	7,408	17	129,145	19	15	290
Lake	23,882	48	1,140,069	604	14	8,655	197	20	3,953
LaSalle	48 160	4	184,394	3,772	18	66 879	898	23	21 077
Lawrence	2,414	23	54,720	174	11	1,861	152	13	2,033
Lee	...	...	...	...	...	...	...	...	...
Livingston	40,703	39	1,590,519	8 563	19	162,145	194	20	3,828
Logan	13,036¼	38	493,391	5 170½	17	87,482	83	19	1,572
Macon	13,829	35	479,416	3 102	16½	45 195	80	18¾	1,697
Macoupin	11,904¼	23	276,888	1,013½	15	15,815	22	11	250
Madison	15 997	22	352,624	845	23	16,072	50	81	4,030
Marion	6,423	20	129,379	564	11	6,463	14	9	1 0
Marshall	23,718	29	699,911	3,830	19	72,979	131	20	2,620
Mason	...	...	...	...	...	...	....	...	...
Massac	1,308	17	22,389	39	9	366	1	12	12
McDonough	17,002	33	553,792	7,307	16	117,046	..	...	...

Agricultural Statistics—Continued.

Counties	Oats			Rye.			Barley.		
	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels
McHenry	31,649	41	1,297,918	1,812	16	29,438	518	19	9,818
McLean	41,045	38	1,549,808	13,148	16	214,345	666	17	11,228
Menard	6,656	32	213,943	908	15	13,184	12	22	260
Mercer	18 525	35	652,264	5,135	14	71 100	92½	23	2,111
Monroe	5,928¼	24	143,580	91¼	16	1 484	43	24	1,034
Montgomery	11,237	22	251,223	2,056	14	29,181	83	10	790
Morgan									
Moultrie	4,480½	26	118,185	1,327	13	17,054	15	11	160
Ogle	54,041	43	2,317,092	5,356	19	101,448	11,617	19	228,948
Peoria	34,232	19	661,250	12,329	15	185,300	95	20	1,881
Perry	6,753	24	164 843	54½	5	270	½	16	8
Piatt	9,819¼	32	316,230	3,310	16	52,546	57	24	1,544
Pike	5,959	21	122,540	414	11	4,371	16	13	210
Pope	2,773	22	61,620	25	6	143	1	25	25
Pulaski	617	* 34	20 978						
Putnam	5,139	41	212 509	1,744	17	30,864	115	16	1,798
Randolph	9,639	24	236,101	59	15	879	53	13	697
Richland	4,509½	22	101,179	135	11	1,476			
Rock Island	11,756	34	399,700	2,826½	20	55,601	1,052	22	22,655
Saline	4,031	22	88 169	5	7	36			
Sangamon	7,632	32	247,820	4,304	15	64,771	128	15	1,976
Schuyler	4,452	22	97,448	1,647	10	16,808	5	14	70
Scott	1,050	31	32,628	624	15	9,265	4	50	200
Shelby	12,599	23	287,587	2,296	12	27 279	6	19	115
Stark	11,382	43	489,495	2,544	18	47,016	7	21	150
St Clair	12,135	24	290 688	304	18	5,417	193	33	6,328
Stephenson	36,912	40	1,478,501	12,900	20	252,842	10,351	16	163,953
Tazewell	22,356	34	752,649	10,944	16	173,524	175	17	2,926
Union	4,741	21	98,755	83	10	813	22	16	347
Vermillion	11,258¾	31	353,659	2,036¼	14	28 657	16	10	158
Wabash	1,543	22	34,139	32	9	286	2	15	30
Warren	19,968	43	859,673	3,924	19	74,310	27	8	224
Washington	16,681	23	384,299	187	16	3,044	10	9	92
Wayne	8,041	16	124,757	111½	9	1,031	½	16	8
White	4 063	18	71,732	20	13	251			
Whiteside	29,367	41	1,213,978	6 482	19	125,862	2,207	17	36,982
Will	60,796	40	2,415,712	1,438	19	28,732	43¾	19	826
Williamson	5,747	19	109 022	70	11	788			
Winnebago	41,210	43	1,793,543	11 095	17	183,782	1,273	17	22,189
Woodford	28,489	39	1,111,019	6,902	19	131,267	604	23	14,194
Total	1,474,210	34	49,748,743	231,972	16½	3,825,091	44,982	18	842,942

Agricultural Statistics—Continued.

Counties	Apple Orchard			Peach Orchard			Pear Orchard			Vineyard.		
	Acreage	Av'ge yield in bush pr.acre	Bushels	Acres	Av'ge yield in bush pr.acre	Bushels.	Acres	Av'ge yield in bush. pr.acre	Bushels.	Acres	Av'ge yield in gallons pr.acre	Gallons.
Adams	6,254	25	157,091	470	3	1,452	28	4	104	105	39	4,096
Alexander	518	29	14,977	38	16	650				½	*51	25
Bond												
Boone	1,940¾		1,586									100
Brown	1,704	23	39 562	56	1	62				19	47	895
Bureau	5,003	4	19,809	11	8	85				37	32¼	1,194
Calhoun	2,271	43	97,722	270	18	4,938	3	2	5			
Carroll	1 639	3	4,176							9	9	81
Cass	1,196	36	42,601	41	*22	902	1			11½	71¼	820
Champaign	5,338	9	48,717	91		12	4	6	24	44	17¾	784
Christian	3,926¼	26	101 901	183¼	2	373	8	3	25	17¾	64	1,143
Clark	2,212	11	23,954	57	2	88				5	26	130
Clay	2,009	30	59,714	114	17	2,003	1	65	65	10	16½	165
Clinton	3,583	35	124 240	177	19	3,348	3	26	77	73	22	1,611
Coles	2,701	17	46 488	99	13	1,302	3	17	50	36	2¼	80
Cook	4,292		3 432	2	*22	44	3	16	50	23	17	391
Crawford	1,842	21	39,530	38	41	1,552	2	20	40	2	116½	233
Cumberland	1,118	16	17,418	14	8	110				3	5¼	16
DeKalb	3,693	1	4,521				1	3	3			
DeWitt	2,104	20	41,145	91	*22	2,002	15	*29	435	14	22¼	310
Douglas	1,792	16	28,028	100	8	819	2	16	32	7¾	44	338
DuPage	3 110		2,010				15	13	200	25	10¼	257
Edgar	3,529	18	61,959	67	4	289	8	4	36	1	106	106
Edwards	1,356	26	35 748	41½	25	1,035				1	40	40
Effingham	1,546	43	66,290	73	22	1,591	1	10	10	9	16	144
Fayette	2,141	44	94,245	276	7	1,381	2	2	5	8	6	47
Ford	1,697	5	7,626	34		20				4	21	84
Franklin	19,173	5	93,197	175	30	5,180	4½	72	325	4	22	88
Fulton												
Gallatin	1,021¼	44	41,220	163½	8	1,335	1¼	104	130			
Greene	1,805¾	61	110,304				2⅝	57	150	19½	37	717
Grundy	1,789	1	2,710	67½	61	4,110				63	*51	3,213
Hamilton	2,072	18	38,123	317	23	7,401	4	130	520			
Hancock	6,431	18	113,702	148	2	341	5	6	29	418	117	49,106
Hardin												
Henderson	1,618	17	28,040	4	*22	88				3	27	80

Agricultural Statistics—Continued.

Counties	Apple Orchard			Peach Orchard			Pear Orchard			Vineyard.		
	Acreage.	Av'ge yield in bush pr.acre	Bushels.	Acres	Av'ge yield in bush pr.acre	Bushels	Acres	Av'ge yield in bush pr.acre	Bushels.	Acres.	Av'ge yield in gallons pr.acre	Gallons.
Henry	4,135	3	11,882	1	5	5				*5	814	4,069
Iroquois	4 435	7	31 505	21	1	20	1	20	20	32	3⅛	107
Jackson	2,656	57	151,114	1,053	75	78,912	66	14	955	22	10	227
Jasper	1,406	19	26,179	111	11	1 218				5¾	44	253
Jefferson	3 719	30	109,798	416	39	16,151	*12	26	333	7	51	357
Jersey	1,296½	52	68,123	47	42	1,965	3	37	110	62	132½	8,216
JoDaviess	1,423	2	2,329							8	127	1,014
Johnson	1,332	44	59,057	633	44	27,843				1	52	52
Kane	3,272		2,317							4	*51	204
Kankakee	2,433	1	3,516	¾	9	7	1	*29	29	38	18½	704
Kendall	2,922		972	¾	*22	16	½	*29	14	4	4	15
Knox	4,462⅛	10	47,466	4		1	*¼	*29	7	33½	4¼	142
Lake	3,629¾	6	21,361			5	1	2	2	2¼	53	120
LaSalle	5,974	2	14,030	219		176	2	6	11	38	137	5,211
Lawrence	1,979	24	48,170	108	18	1,990	1	*29	29	*5	*51	255
Lee												
Livingston	4,158	7	27,196	5	20	100	1	*29	29	28¼	25½	720
Logan	2,590½	7	59,866	40¾	1	50	4	1	3	6¾	21	145
Macon	3,084	12	37,077	45	1	65	9		4	58	46	2,647
Macoupin	5,676⅞	46	263,535	169	42	7,170	13¼	17	230	24⅝	36	876
Madison	6,250	57	353,640	239	36	8,597	54	28	1,536	154	55	8,495
Marion	4,052	45	182,851	351	26	9,123	1	18	18	14	8	117
Marshall	2,710	*22½	60,975	3	*22	66	10	*29	290	52	11	570
Mason												
Massac	1,414	25	34,858	157	34	5,353	5	176	880	2	46	92
McDonough	3,187	19	61 787							163	51	8,313
McHenry	3,361	2	6,953				2	4	8	24	46	1,109
McLean	6,733	11	75,960	74	10	730	3	18	55	55	14½	811
Menard	1,610¾	32	51,245	29	15	445			140	5	16	80
Mercer	3 045	5	15,311	4	*22	88	3	2	7	31	1	30
Monroe	1,208¼	37	45,174	44¼	35	1,539	5¼	10	55	103¾	22¼	2,317
Montgomery	3,631	35	128,865	240	14	3,314	*15	25	380	13	39	504
Morgan												
Moultrie	1,511	17	25,470	58	9	494	18¾	7	140	5	20	100
Ogle	3 422	3	11,623							*13½	7	93
Peoria	3,274	17	55,606	5	34	170	3	3	10	51	137½	7,025

Perry	1,421	33	47,577	147	30	4,345	20	14	275	2½	11½	29
Piatt	1,846½	7	13,031	45		28	1	*29	29	8¾	8	70
Pike	4 656	36	168,535	202	11	2 213	5	1	4	59	124½	7,345
Pope	1,413	24	31,453	870	37	32,446	4	35	140	16	21½	345
Pulaski	1 441	*22½	32,422	110	*22	2,420						
Putnam	1,336	6	7,869	21	*22	462				2	64	128
Randolph	2,446	51	125 056	238	100	23 749	1½	190	214	17	48	619
Richland	2,321½	34	78,619	191	19	3,558				15	21	315
Rock Island	2,789¾	7	19,238	23½	13	300	1	*29	29	61¾	29¾	1,837
Saline	1,362	39	52 832	247	12	2,895	23	*29	667	6	13¼	80
Sangamon	3,760	24	89,430	410		318	5	2	10	19	32¼	615
Schuyler	2,154	21	44 726	52	*22	1,144	10	1	10	8	4¼	34
Scott	902	33	29,868	106	15	1,573	3	17	50	53	127¾	6,767
Shelby	3,933	21	82 593	242	5	1,124	1	19	19	34	27½	937
Stark	1,116¾	9	9 754							2½	44	110
St. Clair	3,630	32	115 030	70	54	3,753	13	59	770	107	86	9,200
Stephenson	2,015	2	4,502							11	60	661
Tazewell	3,304	24	77,805	34	*22	748	½	40	5	32	74	2,369
Union	3 277	37	120,676	1,168	52	61,591	166¼	36	6,050	6	51	306
Vermilion	3,968¾	17	67,469	39⅜	6	226	1	13	17	6⅞	20¾	142
Wabash	1,188	29	34,630	11¼	11	120	1	*29	29	1	38	36
Warren	2,875	8	24,092	17	1	15						
Washington	1,751	54	94,784	183	36	6,674	7	71	500	4	129	516
Wayne	3,472¼	32	112,672	281½	26	7,368			10	¼	*51	13
White	1,661	30	49 560	109	41	4,448	1	10	10			
Whiteside	3,487	3	11,186							4	11¾	47
Will	4,025¼		1,639	576	*22	12,672	10	*29	290	12¾	19	240
Williamson	1,775	51	89,993	237	86	20,316	2	40	86	2	34	66
Winnebago	2,602	2	5,369									
Woodford	2,595	17	44,043	5	1	5				77	73	5,627
Total	272,942	20	5,395,351	12,862	31	402,587	628	27	16,818	2,612	61	159,944

*Estimated

Agricultural Statistics—Continued.

Counties	Timothy Meadow		Clover Meadow.		Prairie Meadow.		Hungarian and Millet	
	Acres.	Tons	Acres	Tons.	Acres.	Tons.	Acres	Tons.
Adams	27,972	33,594	1,799	2,167	10	10	59	30
Alexander	387	501	146	134	...	..	17	15
Bond	...	..	..	..	.	..	.	..
Boone	14,382	19,147	929	1,275	8,267	10,630	70	115
Brown	8,323	11,024	1,032	1,128	40	79	11	12
Bureau	35,996	52,869	604	986	12,265	15,925	207	222
Calhoun	1,367	1,488	989	975	216	142	41	29
Carroll	17,051	25,228	4,295	6,666	3,726	5,235	14	23
Cass	4,923	6,546	91	115	695	807	39	53
Champaign	34,331	45,132	231	363	6,771	5,962	446	563
Christian	29,111	38,138	54	89	271	313	67	82
Clark	16,135	17,816	845	872	20	26	30	51
Clay	8,306	9,689	58	61	6,302	5,303	26	16
Clinton	10,607	10,447	256	214	207	170	133	127
Coles	20,888	27,338	577	633	524	438	280	353
Cook	31,071	39,801	*496	672	63,262	66,243	555	870
Crawford	11,205	13,097	212	276	3	3	137	180
Cumberland	15,606	15,602	123	155	56	47	80	65
DeKalb	35,901	58,745	1,767	2,776	23,564	30,988	303	466
DeWitt	14,796	18,803	91	86	488	435	69	276
Douglas	19,128	22,895	452	509	1,137	991	405	460
DuPage	25,902	33,672	182	*249	15,468	*17,633	222	*304
Edgar	28,322	33,407	805	835	321	276	81	91
Edwards	4,627	5,859	673	756	2,564	2,657		
Effingham	16,794	16,770	40	41	1,038	871	127	142
Fayette	16,130	16,321	685	623	17	15	83	77
Ford	19,869	18,087	77	88	4,713	4,003	333	344
Franklin	3,583	3,102	149	158			28	22
Fulton	.		.				.	.
Gallatin	2,295	2,037	624	804	.	.	4	4
Greene	13,955	23,662	922	943	10	40	44	53
Grundy	16,426	17,524	401	516	14,273	16,169	62	87
Hamilton	5,590	5,151	329	296				
Hancock	43,162	47,423	634	779	1,091	1,056	164	233
Hardin	.	.						..
Henderson	11,992	17,880	148	273	361	512	32	47
Henry	29,979	43,268	554	797	11,176	14,971	401	735
Iroquois	37,871	41,023	423	711	12,172	11,101	1,032	992
Jackson	3,164	3,668	2,080	2,298			43	44
Jasper	14,768	15,637	141	142	379	454	44	47
Jefferson	8,210	9,093	94	91	1,048	1,247	139	126
Jersey	12,427	15,884	582	555	20	15	1	1
JoDaviess	19,510	35,179	1,771	2,770	2,580	3,718	4	28
Johnson	2,013	1,918	1,268	1,134			30	37
Kane	36,225	57,033	1,090	2,060	17,941	24,391	353	551
Kankakee	31,263	38,385	428	264	20,507	22,943	548	334
Kendall	19,060	23,391	941	1,555	9,064	10,246	203	304
Knox	41,942	61,078	543	840	360	384	122	181
Lake	21,474	31,392	1,961	2,477	23,841	28,763	130	200
Lasalle	55,412	73,003	936	1,256	31,188	31,242	318	476
Lawrence	7,578	9,396	939	1,036	44	48	152	233
Lee	.		.				.	
Livingston	51,709	50,583	632	1,302	20,235	21,499	570	720
Logan	16,166	25,262	245	338	1,767	876	130	173
Macon	18,984	26,600	223	329	1,000	884	58	57
Macoupin	35,146	44,586	364	410	4	15	125	123
Madison	17,549	22,000	576	833	25	23	297	709
Marion	17,523	16,297	2,826	3,910	799	701	44	48
Marshall	15,852	21,756	566	848	2,503	2,962	104	125
Mason	.	.	.	.	.	.	.	
Massac	2,870	2,273	239	148	3	2	66	412
McDonough	29,788	42,662	1,582	1,793			261	*357
McHenry	30,967	34,020	5,462	3,952	23,753	24,267	1,068	1,501
McLean	53,732	71,620	1,507	1,921	2,585	2,703	223	335
Menard	9,951	14,233	79	126	140	31	148	162
Mercer	23,085	34,110	751	1,083	2,189	3,048	420	579
Monroe	2,351	3,015	3,298	4,110			103	125
Montgomery	31,486	38,954	207	217	1,514	14	230	188
Morgan	.		.					.
Moultrie	10,688	14,123	164	134	425	387	103	122
Ogle	32,831	45,215	6,824	10,980	6,096	8,009	133	186
Peoria	25,459	34,554	772	960	567	499	60	65
Perry	2,925	3,126	93	83	...	....	137	63

Agricultural Statistics—Continued.

Counties	Timothy Meadow		Clover Meadow.		Prairie Meadow		Hungarian and Millet.	
	Acres	Tons	Acres	Tons.	Acres	Tons.	Acres.	Tons
Piatt	13,532	15,795	189	165	822	715	137	184
Pike	14,200	17,801	3,302	3,445	283	401	60	149
Pope	1,801	1,457	548	368	...	...	70	82
Pulaski	1,000	1,300	775	1,062	...	...	200	*274
Putnam	6,290	7,845	67	70	814	695	7	10
Randolph	5,108	5,968	2,212	2,596	61	50	92	98
Richland	14,190	15,046	504	467	247	16	6	6
Rock Island	14,174	22,479	555	830	9,612	14,292	161	266
Saline	2,711	3,661	671	663	7	4	14	18
Sangamon	30,624	50,117	1,980	10,815	140	160	83	102
Schuyler	10,990	15,074	2,027	2,100	30	34	149	192
Scott	4,907	6,967	117	167			12	16
Shelby	28,193	34,358	482	591	276	266	173	196
Stark	11,400	17,682	213	468	817	823	37	41
St Clair	9,034	12,022	2,649	3,786	12	2	170	238
Stephenson	17,396	26,170	8,789	11,984	5,188	7,817	505	717
Tazewell	21,343	33,376	1,327	1,692	1,479	1,998	64	96
Union	1,646	1,894	1,935	1,471	24	22	43	34
Vermillion	40,239	45,592	315	335	2,120	1,901	613	914
Wabash	5,487	7,053	993	1,241			...	...
Warren	23,902	38,298	212	306	147	147	83	111
Washington	4,219	4,384	13	23			210	728
Wayne	7,393	8,107	528	528	9,358	9,937	20	10
White	6,057	7,575	1,774	2,172			33	91
Whiteside	23,673	35,080	1,995	3,269	18,666	24,541	735	1,349
Will	43,615	56,965	4,481	7,474	30,180	36,600	505	428
Williamson	2,787	3,116	683	879	1	1	9	7
Winnebago	20,481	26,636	4,070	5,979	6,671	9,185	622	823
Woodford	18,552	26,416	1,581	2,234	2,395	2,910	101	149
Total	1,741,069	2,241,816	105,832	145,155	450,947	514,948	16,834	23,076

Agricultural Statistics—Continued.

Counties	Buckwheat			Castor Beans			Beans			Peas		
	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels
Adams	639	14	8 975	2		12	15	13	194	3	37	110
Alexander	5	*13	65			2	6	16	97	½	80	40
Bond												
Boone	877	11	10 046				36½	7	258	8½	22	186
Brown	94	10	956				26	13	332			
Bureau	216	15	3 224	1	40	40	16	9	142	83	10	843
Calhoun	10	20	198				1	17	17			
Carroll	460	12	5,820				6½	8	58	1	25	25
Cass	25	5	126	½	24	12	6	1	6	2	21	43
Champaign	302	14	4 283				10	15	151	½	58	29
Christian	104	10	1 080	13½	11	154	11¾	11	135	1½	10	15
Clark	231	10	2 356	2	9	18	89	9	834			
Clay	116	9	1 051				54	7	383	1	20	20
Clinton	7	8	59	157	6	966	18	10	186	1	15	15
Coles	90	9	835				20	7	139	5	25	146
Cook	179	13	2 270				33	22	725	166	30	4 915
Crawford	103	9	924				10	11	106	2	10	20
Cumberland	194	12	2 234				75	9	645			
DeKalb	687	12	8 102				28	13	36	1	38	38
DeWitt	37	7	269				4	9	37	1	90	90
Douglas	102	51	5 188				5½	19	112			
DuPage	151	14	2 149				4	18	74			
Edgar	44	14	628				10	38	380	2	60	120
Edwards	8	10	78									
Effingham	119	9	1 105				25	14	340	1	55	55
Fayette	128	13	1,714	2	12	25	32	8	245	¾	21	16
Ford	40	9	70				5	16	81	2	32	65
Franklin	53	10	537	2 228	4	8 717	5¼	8	42	1	25	25
Fulton												
Gallatin												
Greene	25	14	355				1⅞	19	38	3	27	80
Grundy	73	13	971	1	15	15	11	8	92	2	30	60
Hamilton	14	7	98	75	4	272	3	7	20	1	80	80
Hancock	349	12	4 029				30	10	314			15
Hardin	47	16	737									
Henderson	104	18	1 876				1½	11	16			
Henry	92	15	1 379	1	20	20	3	14	44			
Iroquois	405	11	4 635				34	12	415	2	79	157
Jackson	47	16	737				6	19	112	4	62	247
Jasper	172	11	1 942				50½	11	554			
Jefferson	25	11	281	812	3	2 359	9	10	88	1	9	9
Jersey	20	10	210									
Jo Daviess	661	14	9 426	2	16	32	8	13	104	21	19	405
Johnson	3	16	47	6	6	35				16	13	212
Kane	513	15	7 668				11	11	124			
Kankakee	341	13	4 390	¼	16	4	18	9	168			
Kendall	136	12	1 574				¾	51	38			
Knox	392	14	5 529				36½	38	1,421	2	67	135
Lake	401	14	5 478	¼	16	4	36	13	457	4¾	71	356
LaSalle	281	14	3,804				31	12	380	4	29	116
Lawrence	91	12	1 074	5	13	67	26	7	176	1	105	105
Lee												
Livingston	70	15	1,077				16	18	291	1½	26	31
Logan	11	11	134				3½	27	94			
Macon	38	14	545			6	9	10	92			
Macoupin	80	7	230				5	13	65	3½	75	235
Madison												
Marion	256	13	3,242	82	5	392	20	15	306	1¾	95	167
Marshall	11	7	78				7	10	70			
Mason												
Massac				1	9	9	10	1	8	10	1	10
McDonough	348	15	5,385	. .		. .						

Agricultural Statistics—Continued.

Counties	Buckwheat			Castor Beans			Peas			Beans		
	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels	Acres	Average yield in bushels per acre	Bushels
McHenry	1 594	11	18 279				46	13	592	22	15	331
McLean	184	11	2 075	3	6	18	18	15	269	6	62	372
Menard	25	1	30	6	16	98	1	10	10	½	80	40
Mercer	260	11	2,952				16	16	263	1	8	8
Monroe	3	8	24	1	2	2	½	4	2	1	200	200
Montgomery	84	11	963				3	14	43	1	9	9
Morgan												
Moultrie	69	11	800				3	27	80	2½	106	265
Ogle	508	15	7 560			3	16⅔	20	345	⅓	120	15
Peoria	195	11	2,236				6	11	68	1	35	35
Perry	4	6	25	½	20	10	2½	7	18			
Piatt	58	12	708	54	5	270	19	31	600			
Pike	41	10	421	1	2	2	33	10	319			
Pope	5	4	22				16	7	115			
Pulaski												
Putnam	3	9	27	50	4	200						
Randolph	13	9	117				⅓	8	2	5	69	343
Richland	128	13	1 704	93	4	395	42	7	309	¾	36	27
Rock Island	317	13	4,106				7½	12	92	61½	1	60
Saline	4	6	24	1	3	3	2	5	10	2	2	5
Sangamon	5	14	68	45	4	222	10	10	98	3	28	85
Schuyler	152	11	1 683			4	28	8	215	2	4	8
Scott	6	10	60				1½	77	115	½	72	36
Shelby*	173	11	1,882				22	34	752	1	12	12
Stark	15	10	151	⅔	20	16	3⅓	3	11			
St Clair	4	29	115				7	97	680	4	146	583
Stephenson	366	13	4,617				10	13	130	5	17	84
Tazewell	53	13	716				9	25	229	2	81	162
Union	26	7	174							6	85	510
Vermilion	229	12	2,843				37½	16	601	1	44	44
Wabash	12	14	177			2	2¾	12	34			
Warren	289	11	4,244	10	6	60			31			175
Washington	7	7	50			10	13	7	86	2	15	30
Wayne	332	11	3 743	162	5	797	35½	8	303	3	3	10
White	11	12	128	576	4	2,109	29	4	126	2	13	26
Whiteside	395	15	5 897	36	1	29	56	13	700	7	43	301
Will	226	11	2 567				9½	14	427	2½	42	106
Williamson	1	8	8	1⅛	20	22	12	3	40	4	10	40
Winnebago	314	15	4,789	70	4	255	58	10	607	9	13	120
Woodford	51	12	635	2	15	30	8	9	72	1	5	5
Total	15,880	13	207,696	4,503⅚	4	17,728	1,545	13	19,944	521	25	13,283

*Estimated

Agricultural Statistics—Continued.

Counties.	Irish Potatoes			Sweet Potatoes.			Tobacco			Broom Corn.		
	Acres	Av'ge yield in bush. pr.acre	Bushels	Acres	Av'ge yield in bush pr.acre	Bushels	Acres	Av'ge yield in pounds pr.acre	Pounds.	Acres.	Av'ge yield in pounds pr.acre	Pounds.
Adams	1,950	59	115,237	65	68	4,425	19	710	13,485	23	196	4,500
Alexander	149	93	13,848	46	41	1,867	12	829	9,950	2	515	1,030
Bond	...	...	...	...	...	...	...	...	...	...	...	...
Boone	562½	67	37,699	2	15	30	1	645	645	460	506	233,000
Brown	314	85	26,842	4	80	320	12	536	6,435	4	625	2,500
Bureau	1,366	92	125,667	23	55	1,265	3	120	360	3	433	1,300
Calhoun	491	68	33,531	½	200	100	22	602	13,245	...	...	...
Carroll	740	62	45,539	26	10	273	8	1,027	8,220	4	812	3,250
Cass	267	67	17,872	43	50	2,145	¼	200	50	...	...	...
Champaign	1,307	93	120,906	16	81	1,201	7	1,196	8 370	1,488	396	589,870
Christian	557¼	109	61,012	21	89	1,867	11⅞	568	6,461	25¼	172	4,350
Clark	561	75	41,862	3	109	326	18	897	16,151	12	504	6,050
Clay	289	60	17,291	11	87	954	41	566	23,210	22	201	4,430
Clinton	701	64	44,624	8	80	639	4	412	1,650	24	250	6,000
Coles	879	84	74,154	26	577	15,004	81	216	17,530	3,312	469	1,553,490
Cook	9,466	77	730,622	4	56	225	30	1,172	35,170	4	500	2,000
Crawford	218	88	19,225	11	58	637	27	1,048	28,305	...	...	...
Cumberland	275	67	18,400	12	30	356	24	576	13,829	196	260	50,950
DeKalb	1,423	68	96,627	...	...	...	...	...	50	21	24	500
DeWitt	374	88	33,070	5	55	275	3	768	2,305	34	59	2,000
Douglas	228	88	20,126	6	80	481	6½	422	2,745	1,752	169	295,765
DuPage	2,934	80	234,244	...	...	...	...	...	...	...	...	...
Edgar	721½	85	61,118	23	116	2,676	54	441	23,860	68	677	46,060
Edwards	133	81	10,797	9½	40	407	90¼	693	62,570	4	200	800
Effingham	680	64	43,311	12	81	975	23	490	11,280	8	513	2,566
Fayette	347	72	25 004	12	88	1,053	27	603	16,274	1	1,180	1,180
Ford	514	96	49,421	2	73	147	...	...	35	87	824	71,709
Franklin	200½	76	15,229	29	80	2,318	1,074½	592	636,656	...	...	...
Fulton	...	...	...	...	...	...	...	...	...	...	...	...
Gallatin	233¼	75	17,395	13¾	82	1,121	135⅞	625	84,929	1¼	208	260
Greene	620⅜	51	31,638	43½	55	2,406	6	466	2,795	1¼	55	69
Grundy	610	85	51,908	6	26	155	...	...	...	...	...	...
Hamilton	159	69	10,953	18	85	1,521	1,419	643	913,127	...	...	...
Hancock	11,129	7	83,122	23	71	1,643	8	415	3,324	27	626	16,900
Hardin	1,748	87	151,431	...	...	...	...	...	17,610	...	...	...
Henderson	196	84	16,420	2	47	95	1¼	240	300	46	343	15,800

Henry	1,144	89	101,547	12	73	872	1	150	150	3,307	540	1,785,860
Iroquois	1,354	81	109,796	7	68	475	31	577	17,877	31	418	12,960
Jackson	335	69	23,244	48	80	3,857	49	668	32,731	2	250	500
Jasper	367⅞	72	26,610	31¾	34	1,075	42¾	1,027	23,379	19	264	5,015
Jefferson	390	58	22,540	40	53	2,139	153	281	43,055	3	533	1,600
Jersey	249	8	1 974	7	30	210	1	600	600	6	366	2,200
JoDaviess	1,272	79	100,527	124	3	398	103	1,504	154,966	9	777	7,000
Johnson	171	90	15,447	29	42	1,224	1,227	556	682,111	17	418	7,100
Kane	1,353	85	115 789	1	25	25	...	...	...	...	...	...
Kankakee	1,026	84	85,859	1	65	65	2	385	770	43	572	24,600
Kendall	738½	84	61,696	1	22	22	...	...	10	3	333	1,000
Knox	1,410	85	120,397	49½	66	3,244	1¾	397	695	1,301½	820	1,067,316
Lake	1,491	82	122,701	5¼	39	205	...	...	200	7½	720	5,400
LaSalle	2,525	82	208,252	16	61	979	2	177	355	27	666	18,000
Lawrence	295	80	23,485	14	67	936	7	824	5 767	13	470	6,100
Lee	...	...	...	...	...	...	...	...	...	...	...	...
Livingston	1,281	115	147,399	5	132	662	1¾	1,852	3,242	69	545	37,600
Logan	810½	94	76,455	6½	80	490	3½	344	1 075	19¾	382	7,550
Macon	673	94	63,714	17	60	1,030	4	517	2,070	7	235	1,645
Macoupin	542⅞	116	62,717	65⅝	40	2,630	6⅞	750	4,970	27	196	5,300
Madison	2,916	39	114,361	77	40	3 118	77	652	51,298	64	398	25,480
Marion	325	71	23,112	19¼	103	1 987	43¾	505	22,110	32	181	5,807
Marshall	460	84	38 669	½	80	10	¾	708	530	10	400	4,000
Mason	...	...	...	...	...	...	...	...	...	...	...	...
Massac	341¼	73	24,951	23¾	51	1,207	996½	628	625,465	...	...	50
McDonough	500	82	41,035	...	...	...	...	...	...	34	223	7,600
McHenry	1,587	73	115,355	...	...	...	3	773	2,320	21	286	6,000
McLean	1,729	92	159,669	81	26	2,108	16	144	2 300	29	294	8,541
Menard	288¾	69	19,792	24½	67	1 640	¾	357	265	¼	400	100
Mercer	670	109	72,948	11	32	354	2	175	350	131	337	44,120
Monroe	809¼	63	50,666	6	48	288	4	73	291	...	...	...
Montgomery	552	71	39,055	26	64	1,664	10	598	5,977	11	545	6,000
Morgan	...	...	...	...	...	...	...	...	...	...	...	...
Moultrie	329	71	23,526	18	29	518	110	54	5,975	31	455	14,100
Ogle	1,375	81	111,620	8¾	199	1 670	8	510	4,082	5½	302	1,550
Peoria	1,495	78	117,114	20	90	1,810	...	...	50	23	413	9,500
Perry	127	91	11 502	5⅞	192	1,127	3½	516	1,910	3	202	605
Piatt	596⅜	80	43,152	4¼	68	288	11½	474	5 270	707½	340	240,700
Pike	1,122	59	66,649	3	81	243	70	604	42,265	2	500	1,000
Pope	1,771	81	142,587	57	77	4,408	767	574	440,526	3	203	608
Pulaski	...	...	...	...	...	...	600	*640	384,000	100	*455	45,500
Putnam	212	61	12,853	...	...	...	...	...	70	...	...	...
Randolph	456	78	35,362	33	99	3,265	21	726	15,249	23	390	8,970
Richland	413½	62	25,701	14½	68	988	9¼	527	4,873	8½	476	4,050
Rock Island	1,696¾	107	182,045	18	60	1 075	...	...	...	24	202	4,840
Saline	368	33	12,213	142	23	3,205	1,848	763	1,410,383	...	...	...
Sangamon	1,167	77	89,670	48	59	2,838	12	425	5,105	20	439	8,785
Schuyler	422	67	28,392	11	42	463	22	662	14,566	57	356	20,306
Scott	204	88	17,885	16	98	1,563	3	701	2,103	7	796	5,571
Shelby	857	61	52,163	8	74	596	19	297	5 652	107	557	59,615
Stark	300	88	26,439	½	64	8	...	...	100	34¼	98	3,375

Agricuctural Statistics—Continued.

Counties.	Irish Potatoes.			Sweet Potatoes.			Tobacco.			Broom Corn.		
	Acres.	Av'ge yield in bush pr.acre	Bushels.	Acres	Av'ge yield in bush pr.acre	Bushels.	Acres.	Av'ge yield in pounds pr.acre	Pounds.	Acres	Av'ge yield in pounds pr.acre	Po nds
St. Clair.	1,956	91	178,158	94	74	6,949	18	14	247	1	200	200
Stephenson	1,272	73	92,895	2	96	193	129	1,110	143,208	1	400	400
Tazewell	757	140	106,377	26	83	2,137	2	1,515	3 030	5	355	1,775
Union	492	81	39,632	293	70	20 572	35	751	26 283	½	600	300
Vermilion	704⅔	127	89,306	26⅚	59	1,574	20⅝	67	11,011	30¾	412	12 673
Wabash	193	77	14,822	13¾	29	399	¼	1,200	300	18½	249	4,600
Warren	451	114	51,385	4	85	342	1	1.420	1,420	207	231	47,800
Washington	324	83	26 932	40	65	2,614	16	508	8,132	13	358	4,650
Wayne	369¾	56	20,783	29¼	49	1,427	188⅜	704	132,708	15	180	2,700
White	554	60	33,343	45	45	2,034	338	525	177,287	.....	.....	.....
Whiteside	1 245	99	123,32[illegible]	25	90	2,250	1	3,880	3,880	6	500	3,000
Will	2,650⅜	71	189,506	2	62	125	5¾	1,176	6,765	3	3,500	10,500
Williamson	177	44	7,835	66	51	3,361	2,097	649	1,360 857	4	375	1,500
Winnebago	1,086	72	77,962	4	50	200	....	....	....	221	588	130,000
Woodford	684	85	58,205	2	58	117	6	419	2,515	14	344	4,810
Total	95,717	71	6,795,349	2,355	63	148,270	12 320	640	7,885,586	14,566	455	6,674,747

Agricultural Statistics—Continued.

Counties	Hemp (fibre			Cotton (lint)			Flax (fibre)			Sorgo	
	Acres	Average yield in pounds per acre	Pounds	Acres	Average yield in pounds per acre	Pounds	Acres	Average yield in pounds per acre	Pounds	Acres	Gallons
Adams										147	25,549
Alexander										138	11,693
Bond											
Boone							1,628½	331	539,000		
Brown										212	16 010
Bureau										73	5,671
Calhoun										51	2 776
Carroll										87	3,018
Cass										20	2,126
Champaign	400	300	120,000				1,336	63	83,936	211	20,106
Christian	¼	40	10				29	210	6 080	146	13,890
Clark							27			460	35,012
Clay							219			492	26,792
Clinton				135	*191	25 785				135	6 985
Coles										374	28 441
Cook	45	*300	13,500				8,215	50	411,296	25	3 839
Crawford										288	21,148
Cumberland							171			339	20,060
DeKalb							3,407	82	281,000	1	40
DeWitt										63	6 298
Douglas							39	170	6 628	185	21,140
DuPage							3,633	145	526,015		
Edgar										212	25 674
Edwards										241¾	14,300
Effingham										486	27,490
Fayette										525	17,025
Ford	400	350	140 000				6,576	80	529,176	71	6,155
Franklin				3½	377	1,178	242			538½	24,342
Fulton											
Gallatin	⅛	400	50							392¾	27 494
Greene										129½	7 496
Grundy							181			11	1,070
Hamilton							104			278	15,846
Hancock										487	37,728
Hardin										*45	2,836
Henderson										133	10,521
Henry										45	6,235
Iroquois	227	44	10,000				14,259	9	131 031	236	18 963
Jackson				21	397	8,340				289	10,591
Jasper							147	42	6 272	553½	39,681
Jefferson				18	17	310	305	4	1,400	460	23 336
Jersey											
JoDaviess							348	905	315 173	20	1 309
Johnson				3	258	775				283	19,192
Kane							55	1091	60 000		
Kankakee							2,243	45	101,900	45	4,133
Kendall										1¼	92
Knox										126	10,993
Lake									2,278,000	4¾	362
LaSalle							11	636	7,000	66	5 109
Lawrence							11			324	22 010
Lee											
Livingston							2,930		202,170	126¼	9,927
Logan										11	1 091
Macon	43	1291	55,500				146	1163	169,808	119	8,516
Macoupin										132½	12 931
Madison										427	25,012
Marion							54¼	66	3,612	424	25 644
Marshall										60	5,908
Mason											
Massac				1¼	260	325	1¼	260	325	311	20,826
McDonough										231	24,754

Agricultural Statistics—Continued.

Counties	Hemp (fibre)			Cotton (lint)			Flax (fibre)			Sorgo	
	Acres	Average yield in pounds per acre	Pounds	Acres	Average yield in pounds per acre	Pounds	Acres	Average yield in pounds per acre	Pounds	Acres	Gallons
McHenry							3 253			13	891
McLean							810		10,373	108	7,546
Menard								12		26	2,280
Mercer										91	8 174
Monroe										4½	2 008
Montgomery							30			152	9,174
Morgan											
Moultrie							22	410	9,032	229	14 597
Ogle							202			3	276
Peoria										82	3 530
Perry										78¾	5 685
Piatt							685¼	112	76,685	55¼	5 618
Pike										97	8 520
Pope				8	83	664				691	44,390
Pulaski											
Putnam										5	2,606
Randolph							3	10	30	188	15 604
Richland							132	15	1 963	485½	26 162
Rock Island										32½	2,826
Saline				4	43	174	4	43	174	576	25 763
Sangamon							20			31	3 215
Schuyler										340	35,000
Scott										21	2, 396
Shelby						4	52			357	23 392
Stark										10½	1 114
St Clair	15	25	384				8	15	120	53	3 149
Stephenson							629	51	32,019	976	2 229
Tazewell										39	4,116
Union				1½	229	343				999	14,550
Vermillion							3 114	3	8 697	186¾	21,553
Wabash									43	139	8,985
Warren										54	3,715
Washington							19	9	166	152	10 016
Wayne	¼	400	100	¼	40	10	225			91⅜	54 343
White										89.2	43 198
Whiteside										39	2,767
Will	24	*300	7,200				764			33	1, 385
Williamson				10	128	1,278				308	15 177
Winnebago										11	840
Woodford										53	5,168
Total	1,154	300	346,744	205	191	39,186	89,304	69	6,178,693	19,335	1,227,164

Agricultural Statistics—Continued.

Counties	Miscellaneous Crops.						Uncultivated Acreage.			
	Turnips and other root crops		Fruits and berries not included in orchard		Other crops not named		Pasture	Woodland	Uncultivated not woodland or pasture.	Area city and town.
	Acreage.	Value	Acreage	Value	Acreage.	Value				
Adams	79	$2,412	180	$6,539	567	$1,257	33,074	64,542	54 542	1,467
Alexander	32	1,371	2	40	30	673	348	18,569	1,949	20
Bond										
Boone	6½	2,702		30	180½	1,265	38,280½	14,300½	7,716½	1,070
Brown	20	382	8	191	175	2,078	20,773	43,215	10,061	653
Bureau	8	707	8	296	13	200	92,875	13 406	20,160	369
Calhoun	13	330	2	122			2 551	51,955	7,850	
Carroll	18	37	2	40	40	665	48,476	18,610	6,320	697
Cass	7½	325	32	702	25		22,315	27,589	4,466	643
Champaign	42	1,039	61	5 771	121	5,352	83,162	11,541	42,094	3,714
Christian	40¾	1,661	34½	1,876	13½	135	45,015	21,644¾	30,517¾	790
Clark	47	600	13	276	1	9	24,164	167,101	12 568	4,568
Clay	194	608	4	450	978	2 459	12,758	32,137	16,250	76
Clinton	15	2,300	131	8,949	78	200	13 458	56,753	18,843	255
Coles	126	2,958	87	3 698	41	35	44 383	23,731	8,892	1,280
Cook	1,861	27,015	178	2 178	1,673	22,161	81,062	15,273	9,066	1,110,779
Crawford	28	3 981	2	520			17,430	52,775	9,807	284
Cumberland	33	637	3	33	33	426	10,499	18,866	2,453	805
DeKalb	8	348	3	63	439	3,320	88,159	9,574	8 535	2,441
DeWitt	17	1,205	7	631	57	1,378	31,752	16,893	22,872	686
Douglas	9½	743	30	2,496	2	716	45,500	7,743	6,015	2,200
DuPage	14	264	90	382	115	2,550	50,641	15,093	2 861	2,245
Edgar	24	2,262	7	793	12,192	1,119	87,423	31,470	21,571	1,647
Edwards	14	99	2	100			5,230	30,782	54,417	840
Effingham	52	2,093	27	340	30	328	11,792	33,951	12,190	2,974
Fayette	18	1,268	40	830	107	948	16,599	46,303	17,174	32
Ford	7	50	17	485			23,966	1,790	54,700	2,235
Franklin	71¾	2,937					6 500½	53,092½	3,024½	
Fulton										
Gallatin	125¾	827	52½	617	46½	441	4,940¾	36,936¾	15,102½	1,190
Greene	55¾	3,016	34	915	90	236	40,279¾	39,933¾	12,674¾	197
Grundy	8	113	4	25			55,391	4,577	9,426	1,343
Hamilton	19	346	1	50			3,035	172,692	2,180	887
Hancock	95	1,452	38	1,354	408	685	44,500	55,593	13,175	2,253
Hardin							3,080	15,996	71,127	

Counties.	Miscellaneous Crops.						Uncultivated Acreage.			
	Turnips and other root crops.		Fruits and berries not included in orchard		Other crops not named		Pasture.	Woodland.	Uncultivated not woodland or pasture.	Area city and town.
	Acreage.	Value	Acreage.	Value	Acreage.	Value.				
Henderson	22	$ 220	6	$ 40	11	$ 167	28,591	24 526	40,507	394
Henry	20	1,238	10	107	58	1,460	81,920	7.520	12 238	1.428
Iroquois	39	3,116	91	4,587	96	468	79,093	10.802	38,231	107
Jackson	139	6,134	145	8,967	385	5,339	4 071	113.781	54,821	1,363
Jasper	44	1,085	6	209	50	19	13 615	47.422	8,266¾	20
Jefferson	139	4 293	22	726	289	4,323	13.693	208 879	20,200	708
Jersey	31	915	3	350	8	100	26,133	96.000	10,730	.....
JoDaviess	26	516	24	1,281	133	960	37,174	59,028	33,492	6,329
Johnson	38	496	7	715	.....	.....	2 994	86,107	34.472	84
Kane	24	1,135	14	50	248	2 930	80,155	24 558	4,567	1,476
Kankakee	78	1 985	58	1,282	621	1,725	68,882	6,186	20,384	352
Kendall	4	285	3½	284	20	38	41.904	8.804½	1,060¼	377
Knox	246¾	10 960	72	5 141	97¼	2,075	99 608¼	31.449¼	10.497¼	5,383
Lake	6½	440	.....	140	277	1,165	62,532¾	28 799¾	10,794	2 115
LaSalle	37	1,820	54	4,488	1,161	6,938	14,911	36 698	21 654	9,527
Lawrence	29	1,032	.....	.....	7	250	9,244	38,292	14,964	260
Lee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Livingston	41¾	1.729	67¼	13	612¾	50	76,466	9.740	20,127½	345
Logan	35	2,258	35½	4,974	25	15,400	53,016¾	14,060½	11,193¼	1.213
Macon	27	1.003	12	4,161	.....	300	46,469	10.439	13.701	1.371
Macoupin	39⅓	901	20¼	688	24½	280	65.554	70 045	14,384	41,986
Madison	109	3,617	203	9,835	3,335	32,079	24,855	54.111	1,379	670
Marion	99	1,019	134	3,583	116	1,574	28,891	50.677	15 076	1,496
Marshall	8½	165	17⅛	30	6	.....	31 528	17.603	15,270	1,507
Mason	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massac	79¼	8,344	64	880	11	23	2.150	40.094	3,335	12
McDonough	.....	.....	.....	.....	.....	.....	51,873	20,052	33,821	.....
McHenry	176	558	18	757	19,057	133.753	102.048	43.191	28,293	5,982
McLean	282	6,230	185	2,182	604	3,194	139,458	26.338	36,459	6,128
Menard	12¾	455	½	35	40½	95	34,572¾	19.745¼	8,762¾	8
Mercer	103	4,323	6	1,230	94	160	63,848	27,063	63,811	2,621
Monroe	40¼	921	¼	25	31	2,035	6,444¾	43,490¾	5,849¾	.....
Montgomery	28	894	2	527	1,492	1,015	49,403	67,802	73,790	2,979
Morgan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moultrie	46	706	15	190	.....	22	26,571	7,317½	6,579	131

Ogle	23½	913	5¾	950	847	277	58,567	31,656	10,356	1,473
Peoria	146	2,938	25	2,525	7½	213	31,769	35,625	56,932	.....
Perry	11	1,097	2	150	. .	50	5 062	35,718	.. .	.. ..
Piatt	17⅜	11,090	224¾	205	25	45	37,088½	5 853¾	18,721½	398
Pike	498	2,087	85	290	1,950	6,437	33,228	87,371	60,565	1,605
Pope	44	541	15	165	9	44	2,331	152,222	.. ..	.....
Pulaski	. .	. .. . . .	.	... . .	. .	....	662	5,000	1,000	.....
Putnam	.... ..	..	6	325		.	17,522	23,282	17,755	528
Randolph	32	1,762	2	430	3	300	7 655	66,512	6,283	46
Richland	54½	1,687	13	186	258½	1,126	10,709½	41,952	9,113½	910
Rock Island	43¾	531	46¼	133	53	119	58,088¾	32 085¼	58 836	5 042
Saline	86	2,013	2	.	763		1,950	3,333	7,124	....
Sangamon	50	2,464	93	3,911	273	6,218	104 485	24 071	10 405	.....
Schuyler	29	259	11	621	117	1,407	14,176	36 096	12,908	114
Scott	23	625	26	602	6	245	19,800	15,391	2,171	.....
Shelby	32	892	16	478	16	318	41,232	30,796	13,249	487
Stark	7¾	775	14½	35	2	70	24,257	2,942	1,982	38
St. Clair	34	1,321	454	18,001		.	11 537	32,997	7,098	.....
Stephenson	14	270	8	441	102	800	45 703	23,331	17,130	18,908
Tazewell	10	1,091	29	1,035	16	609	33 400	30 539	14,773	4,872
Union	65	2 809	806	33,344	355	5,579	5,374	28,759	3 467	.. ..
Vermilion	123⅞	3,873	55¾	3,171	1,350¾	932	108,568½	34,325	17,339½	336
Wabash	14¾	186	4	07	16¼	347	8,015	32,491	7,637	152
Warren	41	873	4	10	10	179	61,762	15,090	7,778	1,124
Washington	10	408	10	675	1	100	10,973	22 306	5 761	....
Wayne	101½	5,514	5¼	3,519	13	100	21,509	64 753	26 729⅝	140
White	134	3,153	1	50	128	1,888	5,883	42 589	20,256	232
Whiteside	71	913	76	3,801	53	730	73,978	11,318	11,690	232
Will	82¼	90,635	22	2 363	9,148⅝	3 239	88,551	17,530	17,279½	1,807
Williamson	52	1 799	8	562			1,683	11,674	1,696	.. ..
Winnebago	16	1,180	48	1,553	165	1,860	56 866	24,331	12 077	1,512
Woodford	31	605	10	664	17	238	33,146	28,228	8,312	2,866
Total	7,057	$279 136	4,523	$178 800	62,069	$299,543	3,612 614	3,625 756	1,745,643	287,736

Agricultural Statistics—Continued.

Counties.	Sheep and Wool.				Fat Sheep.			Fat Cattle.		
	No sheep killed by dogs.	Value per head	Loss by dogs	Pounds wool shorn	Number sold	Average gross weight pr head	Gross weight	No. sold	Average gross weight pr head	Gross weight
Adams	615	$2 55	$1,568	46,747	3,351	108	361,908	4,329	933	4,038,957
Alexander	112	1 25	140	1,328	79	73	5,767	277	550	152,350
Bond										
Boone	547	2 38	1,301	78,774	1,782	99½	177,309	2,399	937	2,249,062
Brown	372	2 26	840	18,168	1,305	111	144,855	2,123	989	2,099,647
Bureau	429	4 13	1,771	44,319	1,354	114	154,356	12,232	999	12,219,768
Calhoun	237	1 85	438	5,202	140	90	12,600	783	786	615,438
Carroll	204	4 51	920	18,520	832	192	159,744	4,825	932	4,496,900
Cass	214	2 40	513	4,983	431	112	5,172	6,098	1,409	8,537,200
Champaign	409	4 71	1,926	29,693	1,676	101	169,276	7,511	1,113	8,359,743
Christian	398	2 49	991	32,861	1,661	93	154,473	9,220	1,146	10,566,120
Clark	654	1 50	981	28,267	2,124	106	225,144	2,481	960	2,381,760
Clay	571	1 75	997	24,638	5,958	83	494,514	1,747	732	1,278,804
Clinton	179	1 89	338	15,476	1,852	64	108,528	1,392	665	925,680
Coles	326	2 18	710	21,674	2,317	106	245,602	6,252	1,121	7,008,492
Cook	110	12 00	1,320	19,808	611	*97½	59,572	1,830	843	1,542,690
Crawford	519	2 07	1,074	32,232	7,214	86	620,404	1,627	910	1,480,570
Cumberland	398	1 26	50	17,562	1,480	86	127,280	1,323	824	1,100,152
DeKalb	400	3 05	1,220	63,417	2,232	100	223,200	5,689	1,120	6,371,680
DeWitt	381	2 65	1,009	38,838	1,967	113	222,271	4,459	1,104	4,922,736
Douglas	177	2 18	342	13,120	1,578	86	135,708	4,950	1,207	5,974,650
DuPage	423	3 46	1,463	176,726	4,792	96	460,032	2,418	1,010	2,442,180
Edgar	513	2 10	1,077	55,529	11,723	100	1,172,300	11,863	1,162	13,784,806
Edwards	250	1 12	280	33,071	2,641	81	213,921	1,001	831	831,831
Effingham	750	1 71	1,282	15,982	461	98	45,178	1,579	764	1,206,356
Fayette	564	1 60	902	32,593	2,265	83	187,995	1,489	793	1,180,777
Ford	30	4 00	120	4,002	156	119	18,564	*1,690	1,060	1,791,400
Franklin	856	1 59	1,361	15,601	2,441	77	187,957	1,767	545	963,015
Fulton										
Gallatin	532	1 05	559	7,540	1,324	83	109,892	916	640	586,240
Greene	492	3 10	1,525	48,337	6,674	96	640,704	9,649	1,193	11,518,493
Grundy	74	4 05	299	17,440	277	101	27,977	4,499	1,030	4,633,970
Hamilton	624	1 00	624	14,242	1,831	81	148,311	837	604	505,548
Hancock	339	1 84	623	16,151	2,167	102	221,034	9,971	1,122	11,187,462
Hardin	309	*2 29	*708	1,380				274	*940	257,560
Henderson	85	2 96	251	5,386	250	96	24,000	5,796	1,192	6,911,730
Henry	132	*2 29	*302	22,695	676	*97½	65,910	10,170	*940	9,559,800
Iroquois	194	2 30	446	17,698	1,277	93	118,761	7,425	1,187	8,813,475
Jackson	437	2 20	961	8,833	960	75	72,000	1,211	557	674,527
Jasper	475	1 62	769	35,920	5,152	89	458,528	1,747	876	1,530,372
Jefferson	662	1 38	913	22,455	2,780	91	252,980	2,663	813	2,165,019
Jersey	196	2 60	510	19,250	35,991	98	3,517,218	1,478	1,003	1,482,434
JoDaviess	910	2 61	2,375	38,306	1,822	140	255,080	3,781	1,062	4,015,422
Johnson	640	1 68	1,075	8,171	1,033	78	80,574	781	615	480,315
Kane	349	1 90	663	73,192	3,547	80	283,760	4,484	1,000	4,484,090
Kankakee	60	2 64	158	7,794	285	100¼	28,571	4,857	1,150	5,585,550
Kendall	200	2 12	424	43,756	1,207	92	111,044	3,559	1,200	4,270,800
Knox	299	3 45	1,031	43,411	3,730	111	414,030	11,267	1,135	12,788,045
Lake	599	2 60	1,557	301,019	8,059	87	381,133	1,716	873	1,497,068
LaSalle	544	3 50	1,904	68,488	4,183	145	606,535	10,883	1,100	11,971,300
Lawrence	408	2 60	1,060	20,674	1,063	91	96,733	1,550	715	1,098,250
Lee										
Livingston	175	1 70	297	15,017	884	102	90,168	7,013	1,085	7,609,105
Logan	90	3 83	344	27,409	1,937	95	184,015	5,943	1,265	7,517,895
Macon	157	3 15	495	28,743	2,242	110	246,620	5,383	1,173	6,314,259
Macoupin	706	2 95	2,348	97,156	4,236	103½	437,895	8,933	1,154	10,310,915
Madison	675	3 22	2,173	29,295	2,486	136	338,096	2,139	880	1,882,320
Marion	661	2 07	1,368	35,644	4,453	102	454,206	2,158	980	2,104,840
Marshall	186	2 80	520	17,866	764	120	91,680	5,369	1,136	6,099,184
Mason										
Massac	226	1 25	2 82	3,190	278	88⅞	24,702	264	643	169,950
McDonough	697	2 25	15 68	27,500	2,851	115	327,915	8,887	1,061	9,429,107

Agricultural Statistics—Continued.

Counties	Sheep and Wool				Fat Sheep			Fat Cattle.		
	No sheep killed by dogs	Value per head	Loss by dogs	Pounds wool shorn	Number sold	Average gross weight per head	Gross weight	No sold	Average gross weight per head	Gross weight
McHenry	842	$2 48	$2,088	187,760	7,512	107	803,784	3,982	957	3,810,774
McLean	289	2 44	705	67,896	3,582	116	415,512	15,159	1,145	17,357,055
Menard	277	3 33	922	24 116	1,462	95⅝	139,800	7,350	1,173	8,621,550
Mercer	294	3 06	882	26,699	1,044	110	114,840	6,603	1,125	7,428,375
Monroe	125	3 31	413	4,592	119	70	8,330	201	517	103,917
Montgomery	535	1 74	930	39,196	3,033	90	272,970	4,758	921	4,382,118
Morgan										
Moultrie	169	1 89	319	15,220	1,236	111⅝	137,966	4,428	963	4,264,164
Ogle	219	*2 29	*481	48,042	1,789	*97½	174,397	8,075	*940	7,590,500
Peoria	481	2 10	1,010	23 454	1,113	110	122,430	3,709	1,420	5,266,780
Perry	312	1 36	424		480	73	35,040	689	631	434 759
Piatt	96	2 14	205	17,275	1,127	88½	99,739	4,538	1,179	5,353,714
Pike	791	2 07	1,637	49 609	2,378	99	235,422	4,747	1,002	4,756,494
Pope	621	1 69	1,049	12,062	953	77	74,381	675	507	342,225
Pulaski	300	83	249	2,600	300	*87½	29,250	700	940	658 000
Putnam	29	3 76	109	8,373	368	100	36,842	1,940	1,137	2,205,780
Randolph	740	1 85	1,369	24,631	1,522	70	106 510	759	616	467,544
Richland	371	2 07	767	30,141	2 252	95	203,940	1,419	711	1 008 969
Rock Island	84	3 11	261	9,050	315	96	30 240	5,244	1,093	5,731,692
Saline	479	1 80	862	11,556	2,110	63	132,930	806	500	403,000
Sangamon	806	3 13	2,523	60,790	3,895	97	377,815	20 132	1,171	23,574,572
Schuyler	416	1 93	802	21,433	1,176	101	118,776	3 311	982	3,251,402
Scott	287	3 71	1,066	29,904	1,535	111	170 385	3,456	1,211	4,185 216
Shelby	529	*2 29	*1,211	58,884	3,370	*97½	328 575	5,180	940	4,869 200
Stark	306	3 58	1,310	33,661	1,644	117	192,348	3,569	1 037	3,701,053
St Clair	217	2 70	585	17,654	1,549	97	150,353	1,503	690	1,037,070
Stephenson	386	1 82	702	39 478	2,366	96	227,136	3,160	831	2,625 960
Tazewell	313	2 68	838	38,725	1,749	100	174,900	3,885	1,119	4,347,315
Union	592	1 48	876	9,172	662	68	45,016	882	557	491,274
Vermilion	1,284	2 44	3,132	103,651	5,094	102¼	520,861	11,487	1,281	14,723,460
Wabash	308	2 46	757	11,503	1,600	87¾	140,400	1,004	594	596,376
Warren	268	3 00	804	28,020	1,266	106	134,196	10,161	1 096	11,136,456
Washington	462	1 00	462	10,489	536	90	48,240	1,254	600	752,400
Wayne	791	1 59	1,257	29 815	4,417	91	401,947	3,052	722	2,203,544
White	944	1 92	1,812	21,102	1,413	81	114,896	1,502	632	949,639
Whiteside	254	3 82	970	37,872	1,230	89	109,470	6,864	1,001	6,870 864
Will	252	3 30	831	30,582	961	108	103,788	9,352	942	8,809,584
Williamson	548	1 75	959	14,454	2,768	91	251,888	1,121	587	658,027
Winnebago	426	*2 29	*976	63,336	1,620	*97½	157,950	4,040	*940	3,797,600
Woodford	315	2 75	866	17,701	1,064	86	91,404	4,330	1,027	4,446,910
Total	39,649	$2 29	90,938	3,291,677	241,422	96	23,237,239	423,984	1,057	451,192,991

*Estimated

Agricultural Statistics—Continued.

Counties	Cows	Butter	Cheese	Cream	Milk
	No kept	Lbs sold	Lbs sold	Gals sold	Gals sold
Adams	7,451	193 780	600	2,362	85,046
Alexander	592	3,375		50	
Bond					
Boone	8,588	540,071	277,706		314 760
Brown	3,169	41,896	50	10	2,582
Bureau	10 246	276,421	188 629	90	4,106
Calhoun	1,066	5 001			
Carroll	7,717	339 408	5 800	850	193,712
Cass	2 160	31 683	70		2,645
Champaign	6 668	181 186	14,950	487	63 727
Christian	5 621	140,414	6,750	201	28,373
Clark	3 961	61 978	365		2,060
Clay	2,920	49,343	6,000	19	5 500
Clinton	2,912	65,671	1 365	40	49,350
Coles	3 793	94 558		11	67,442
Cook	20 978	494 808			
Crawford	4 969	35,759	30		5,000
Cumberland	2,023	33 253	200		550
DeKalb	19,675	1,316,103	639 105	700	657,494
DeWitt	9 225	66 546	108		21,125
Douglas	2 348	54 370	200		7,026
DuPage	12 558	487 869	855,130	127	3,412,582
Edgar	4,995	136 836	293	85	8,720
Edwards	2,128	30 168	765		100
Effingham	4 128	80 698	320	507	5,909
Fayette	4 354	109 195	115		1,200
Ford	2,896	87 246	80	50	5,277
Franklin	2 456	16 310	9,745	2,709,897	
Fulton					
Gallatin	714	10,934			160
Greene	3 726	95 590	2 685		4,905
Grundy	6,197	274 379	1,200		8 710
Hamilton	2,229	9 954			125
Hancock	7 952	221 489	40,715	367	30,680
Hardin					
Henderson	2,273	60 540			200
Henry	11,053	416,751	37,630	30	17 270
Iroquois	9 836	273,178	6 800		32 590
Jackson	2 112	41 065	180	45	11,776
Jasper	3 295	44,912	65		10
Jefferson	3 037	52 564	100	10	800
Jersey	1 695	42 485		512	15,356
JoDaviess	8 686	300,401	16,765	360	3 710
Johnson	1 244	5 520			
Kane	23 347	716,131	299 819	2,655	4 875 875
Kankakee	7 915	371 928	15,761	520	140 455
Kendall	7 287	398 358	1 500		280 326
Knox	10,102	416,155	94 682	160	53 623
Lake	12,485	671,478	224 105	40	901 817
LaSalle	15,391	641,647	65,981	1,170	192 714
Lawrence	2,735	37,079			
Lee					
Livingston	10 557	393,134	631	9	4 751
Logan	5 100	107 653	3 000	75	32 772
Macon	3 614	119,642	200		2,440
Macoupin	8 046	178 603	201 896	1,312	495,926
Madison	5,232	205 686	21 720	1,280	193,660
Marion	3 199	62,432	3 040		103,429
Marshall	4 173	130,721		61	4,970
Mason					
Massac	1 393	28 746			
McDonough	6 082	144 703	1,260		26 940
McHenry	18 378	805 823	969 229		2 331,007
McLean	11,729	328 414	4,750	914	73,321
Menard	2 546	39 024	600	55	8,960
Mercer	5 845	112 518	50		250
Monroe	1 870	37 231	2 124		5,205
Montgomery	5,956	161,685	97,040	1 188	161,094
Morgan					
Moultrie	2,641	56 732	185	25	1,562
Ogle	13,809	715,928	1 674	1,215	24,932
Peoria	6 525	163 603	52 167	430	78 293
Perry	1,936	34 585	1,140		2,500

Agricultural Statistics—Continued.

Counties.	Cows.	Butter	Cheese	Cream.	Milk.
	No kept	Lbs. sold.	Lbs. sold.	Gals. sold.	Gals sold
Piatt	3 091	55.077	20	.....	1,698
Pike	6,062	78 430	325	16	8,538
Pope	1,650	10,555	.....	2	.....
Pulaski	.....	.....	.....	.....	.....
Putnam	1,733	28,853	380	.....	1,400
Randolph	3,180	49,038	3.515	730	4,096
Richland	3,126	56,630	2,462	2	1 255
Rock Island	6,072	266,002	.....	.....	121,823
Saline	1,106	6,284	10	.....	20
Sangamon	5 254	148,989	100	100	3,763
Schuyler	3 190	75.574	160	.....	50
Scott	2,046	54,004	20	20	420
Shelby	6,109	141,280	105	118	65
Stark	3,601	92,447	5,500	6	55 564
St. Clair	4 637	147,787	16,960	90	58 067
Stephenson	11 698	646 507	5,700	1,827	75,794
Tazewell	6,346	172 078	10 165	905	18,050
Union	1,706	28,509	.....	10	5,070
Vermilion	5 934	160,815	23,390	37	25,417
Wabash	1,012	13,230	50	.....	10
Warren	5,424	143,795	170	1,015	18,605
Washington	2,888	43,887	310	.....	350
Wayne	3,728	39,883	.....	.....	68
White	3,254	27,016	.....	.....	87
Whiteside	13,204	789,832	93,974	1,402	72,966
Will	17,366	787,012	57,860	10,060	1,322,646
Williamson	1,244	7,747	.....	.....	5
Winnebago	10,576	831,885	83,755	.....	317,174
Woodford	5 687	167,636	20,280	.....	4,675
Total	556,466	18,970,227	4 502,671	2,744,259	17,124,506

Agricultural Statistics—Continued.

Counties.	Fat Hogs.			Hogs and Pigs		
	No sold.	Av'ge gross w't pr. head.	Gross weight.	No. died.	Av'ge gross w't pr. head	Total gross weight
Adams	43,250	277	11,980,250	37,740	61	2,302,140
Alexander	610	155	94,550	2,996	65	194,740
Bond	7,171	246	1,685,18[illegible]	3,642	*85	309,570
Boone	19,861	277½	5,511,427	1,057	127	134,239
Brown	13,980	278	3,886,440	15,363	66	1,013,958
Bureau	73,528	301	22,131,928	7,103	128	909,184
Calhoun	3,147	239	752,133	6,053	85	514,505
Carroll	39,306	235	9,236,910	22,092	85	1,877,820
Cass	12,410	320½	3,977,405	17,000	108⅙	1,842,375
Champaign	46,529	232	10,794,728	23,079	78	1,800,162
Christian	34,748	237	8,235,276	34,221	74	2,532,354
Clark	12,385	246	3,046,710	9,627	70	673,890
Clay	7,322	277	2,028,194	5,885	61	358,985
Clinton	4,106	198	812,988	13,451	58	780,158
Coles	27,533	244	6,718,052	15,225	68	1,035,300
Cook	14,081	215	3,027,415	837	100	83,700
Crawford	14,362	241	3,461,242	13,326	67	892,842
Cumberland	9,199	241	2,216,959	6,433	64	411,712
DeKalb	62,576	293	18,334,768	5,576	94	534,144
DeWitt	25,720	229	5,889,880	20,828	69	1,437,132
Douglas	20,496	238	4,878,048	13,518	65	878,670
DuPage	17,974	259	4,655,266	1,332	59	78,588
Edgar	31,090	247	7,679,230	21,019	78	1,639,482
Edwards	7,129	237	1,689,573	6,537	72	470,664
Effingham	6,940	234	1,624,960	25,825	72	1,759,400
Fayette	11,189	216	2,416,824	20,189	69	1,393,041
Ford	18,655	255	4,757,025	9,516	83	789,828
Franklin	3,603	199	716,997	12,240	54	660,960
Fulton	54,433	237	12,900,621	9,957	*95	945,915
Gallatin	2,495	205	511,475	7,783	79	614,857
Greene	29,302	221	6,475,742	24,689	79	1,950,431
Grundy	20,665	259	5,352,235	1,384	85	117,640
Hamilton	1,964	204	400,656	9,567	62	593,154
Hancock	44,798	246	11,020,308	20,736	52	1,078,272
Hardin	46	370	17,020	1,472	*190	279,680
Henderson	25,306	271	6,857,926	16,989	82	1,401,592
Henry	71,364	*279	19,910,556	18,326	82½	1,511,895
Iroquois	46,073	242	11,294,866	22,536	71	1,600,056
Jackson	1,825	228	416,100	13,541	84	1,137,444
Jasper	7,031	248	1,743,688	7,956	76	604,656
Jefferson	6,701	222	1,488,288	11,203	70	784,210
Jersey	12,745	260	3,313,700	7,390	95	702,905
JoDaviess	55,752	262	14,607,024	7,557	120	906,840
Johnson	3,748	266	996,968	7,437	72	535,320
Kane	32,422	295	9,564,490	2,626	150	393,900
Kankakee	31,628	270	8,539,560	4,107	72	295,704
Kendall	30,915	301½	9,320,872	5,915	105	621,075
Knox	62,723	304	19,067,792	48,817	85	4,149,445
Lake	18,362	280	5,141,360	328	134	43,952
La Salle	69,353	325	22,539,725	12,508	80	1,000,640
Lawrence	7,041	232	1,633,512	10,766	95	1,022,770
Lee	32,658	270	8,817,660			
Livingston	53,773	260	13,980,980	8,390	88	738,320
Logan	39,277	252	9,897,804	31,136	80	2,490,880
Macon	31,184	237	7,390,608	19,780	75	1,483,500
Macoupin	40,993	234½	9,612,858	37,465	71	2,678,747
Madison	17,081	250	4,270,250	22,959	80	1,836,720
Marion	7,820	221	1,728,220	10,137	60	608,220
Marshall	30,547	315	9,622,305	13,659	103	1,406,877
Mason	8,330	235	1,997,550	3,342	*150	499,800
Massac	1,371	230¾	316,359	4,796	72⅝	347,109
McDonough	42,908	243	10,426,644	25,266	60	1,515,960
McHenry	35,607	254	9,044,178	4,678	99	463,122
McLean	75,588	253	19,123,767	19,307	92	1,776,244
Menard	20,293	231	4,687,683	24,331	74	1,800,494
Mercer	43,924	285	12,518,340	37,120	75	2,784,750
Monroe	738	235	173,430	4,021	87	349,827
Montgomery	26,987	230	6,207,010	18,123	73	1,322,979
Morgan	11,518	242	2,787,356	4,799	*128	614,272
Moultrie	6,527	226½	1,478,365	11,020	72	796,195
Ogle	57,959	*330	19,126,470	27,179	*82½	2,242,267

Agricultural Statistics—Continued.

Counties	Fat Hogs.			Hogs and Pigs.		
	No sold.	Av'ge gross w't pr. head	Gross weight.	No. died	Av'ge gross w't pr. head.	Total gross weight.
Peoria	38,403	361	13,863,483	24,192	53	1,282,176
Perry	872	205	178,760	4,766	85	405,110
Piatt	22,572	*262	5,913,864	21,384	70	1,507,572
Pike	35,947	235	8,447,545	30,259	70	2,118,130
Pope	1,998	220	439,560	6,145	63	387,135
Pulaski	3,000	*145	435,000	200	*82½	16,500
Putnam	10,096	335	3,382,060	1,015	100	101,500
Randolph	2,009	232	486,968	10,381	76	788,956
Richland	4,902	236	1,156,872	6,688	75	501,600
Rock Island	29,175	291	8,489,925	9,410	96	903,360
Saline	2,274	210	477,540	6,051	77	465,927
Sangamon	50,915	236	12,015,940	51,115	77	3,935,855
Schuyler	14,428	250	3,607,000	17,823	68	1,211,964
Scott	14,884	260	3,869,840	20,678	72	1,488,816
Shelby	25,807	*209	5,393,663	28,606	*82½	2,359,995
Stark	26,264	323	8,483,272	12,976	87	1,128,902
St Clair	3,492	263	918,396	10,263	78	800,514
Stephenson	43,704	229	10,008,216	8,731	65	567,514
Tazewell	30,227	275	8,312,425	25,904	74	800,515
Union	1,780	207	368,460	7,108	79	561,532
Vermillion	50,119	219	10,976,061	44,998	72	1,128,912
Wabash	3,198	252	805,896	5,327	71	378,217
Warren	49,348	262	12,929,176	35,929	68	2,443,172
Washington	2,127	200	425,400	10,115	90	910,350
Wayne	7,516	217	1,630,972	10,849	66	716,034
White	7,897	248	1,958,456	13,749	62	852,438
Whiteside	50,604	277	14,017,308	19,745	95	1,875,575
Will	37,500	254	9,525,000	2,064	87	179,568
Williamson	3,123	203	633,969	5,776	135	779,760
Winnebago	37,611	*275	10,343,025	3,408	*82½	28,160
Woodford	32,413	266	8,621,858	16,798	75	1,259,859
Total	2,455,573	.....	646,674,211	1,445,268	94	107,243,774

*Estimated.

Agricultural Statistics—Continued.

MISCELLANEOUS CROPS.

Counties	Timothy Seed	Clover Seed	Hungarian and Millet Seed	Cotton Seed	Flax Seed	Grapes
	Bushels produced	Bushels produced	Bushels produced	Bushels produced	Bushels produced	Pounds produced
Adams	1,420	990				91,454
Alexander						
Bond						
Boone	3 454	1,440			17 666	80
Brown	383	695				20 507
Bureau	6 486	336	38			25,378
Calhoun						7 922
Carroll	2 153	5,426	13		35	15 135
Cass	10					9 300
Champaign	8 189	56	237		13 995	154 825
Christian	4 099	31	43		1,561	44,460
Clark	1,273	600	27		564	1 162
Clay	8,530				2 017	1 375
Clinton	91				1,000	10 780
Coles	1 051	203	12			3 316
Cook	2 272	32	698		99 533	20 010
Crawford	209	103	31			3,249
Cumberland	2 809	81	73		786	940
DeKalb	40,108	2 946	27		49 164	7,148
DeWitt	750	15	34			27 985
Douglas	4 030	308	68		150	7 575
DuPage	3 649	170	317		45,819	61 510
Edgar	5 190	144	246		300	11 795
Edwards	1 180	386				840
Effingham	1 631		52		209	530
Fayette	595	61	44		25	1 240
Ford	16 103	10	673		65 878	9,468
Franklin	78	3		4	1,681	
Fulton						
Gallatin		28				
Greene	202	415				8,565
Grundy	25,532	6	60		1,215	2,775
Hamilton	40	31			871	
Hancock	1,692	123	108			304 101
Hardin						
Henderson	749					3 900
Henry	2 673	330	400			25 207
Iroquois	9 935	30	1,774		108 036	111 320
Jackson	24	68		210		17 775
Jasper	2 665	11	28		8,400	3,863
Jefferson	137		58	5	2 995	21
Jersey	76	102				
JoDaviess	1,577	1,094			7 358	2 288
Johnson	13	115				50
Kane	13 882	506	35		3 679	3 155
Kankakee	21,651	428	1,890	2 065	44,827	18 095
Kendall	22 772	1,764	160			15 956
Knox	3 304	166	10			37 891
Lake	4 600	1,796	34		76 981	18,185
LaSalle	57,091	861	114		1,275	36,007
Lawrence	631	467			160	75
Lee						
Livingston	44 560	218	1,266		39,993	741 495
Logan	1 617		28			31 305
Macon	1 517	363	50		1,167	63 390
Macoupin	4,674	207	20			19 120
Madison			15			52 690
Marion	1,830				823	4,575
Marshall	1,462	251	20			
Mason						15 400
Massac	13				* 14	1,020
McDonough	3,939	1,216				47 010
McHenry	10 930	2 884	720		27,287	25,214
McLean	6,834	140	12		7,736	100 436
Menard	823					2 000
Mercer	3,166	276				9,865
Monroe		468				20,253
Montgomery	3,413	85	3		117	16,514

Agricultural Statistics—Continued.

MISCELLANEOUS CROPS.

Counties	Timothy Seed.	Clover Seed.	Hungarian and Millet Seed.	Cotton Seed	Flax Seed	Grapes.
	Bushels produced.	Bushels produced.	Bushels produced.	Bushels produced	Bushels produced.	Pounds produced.
Morgan	.....	.....	.....	.....	.....	.....
Moultrie	962	43	84	.....	156	2,783
Ogle	18 999	11,029	9	.....	5,182	55,591
Peoria	2,231	551	30	.....	10	140,506
Perry	.....	13	.....	.....	70	20
Piatt	1,275	46	11	.....	7,277	16,932
Pike	516	977	33	.....	.....	61,715
Pope	43	.....	.....	.....	.....	.....
Pulaski	.....	.....	.....	.....	.....	.....
Putnam	245	.....	.....	.....	.....	3,620
Randolph	33	527	63	.....	100	4,465
Richland	25,919	203	.....	.....	835	8,830
Rock Island	689	49	.....	.....	.....	48,026
Saline	.....	17	23	.....	44	500
Sangamon	7,188	21	1	.....	37	29,675
Schuyler	3,905	1,984	220	.....	.....	19,267
Scott	15	19	.....	.....	.....	65,527
Shelby	1,592	108	252	.....	573	14,718
Stark	928	35	.....	.....	2	2,739
St Clair	90	136	.....	.....	* 88	15,200
Stephenson	1,936	10,311	430	.....	9,377	15,187
Tazewell	1,026	746	44	.....	100	91,000
Union	15	52	.....	.....	.....	180
Vermilion	3,279	307	561	.....	28,185	23,181
Wabash	370	765	29	.....	197	550
Warren	1,345	17	.....	.....	.....	28,000
Washington	10	.....	.....	.....	220	125
Wayne	18,104	154	.....	.....	558	1,000
White	3,266	889	.....	1	.....	190
Whiteside	3 154	1,387	400	.....	.....	22,039
Will	9,513	1,898	4,744	1	13,111	15,815
Williamson	.....	115	.....	.....	.....	.....
Winnebago	994	2,850	16	.....	.....	1,175
Woodford	6,163	952	75	.....	.....	106,552
Total	483,571	64,686	16,463	2,286	698,839	3,092,748

SECRETARY'S REPORT.

To the State Board of Agriculture:

The classification of the work of the office and the appointment of members of the Board to act with your Secretary in the discharge of various duties, necessitates the presentation of the major part of the work of the department in the reports of the following standing committees, to-wit: Museum, Library, Crops, Printing, Appropriation and Transportation.

These reports have been received and considered by the Board, and such portions of the remaining duties of the office as might be of interest, are presented herewith.

With the exception of the December, 1878, crop reports, now in course of preparation, the work of the department is completed to date, and all business transactions that should appear in the next volume, is in readiness for the public printer.

The benefits to the State, resulting from the operations of the department and the manifest appreciation by the former General Assembly, of the service rendered, prompts me to suggest that an effort be made to have the appropriation for clerical assistance reasonably increased for the ensuing two years, believing that the more satisfactory discharge of the various duties of the office can be expected where the help is not overtasked, and warrants the small increased expenditure necessary.

DRAINAGE.

The subject of farm drainage has received considerable attention the past year, and every effort has been made to increase the interest in this enterprise which is so important to the great majority of Illinois farmers.

The growing interest manifested in this matter throughout the State is attested in many ways, and the numerous applications for information on the subject indicates that a revolution in public sentiment in favor of thorough drainage is taking place.

To meet the large demand for information on this subject, an edition of 10,000 copies of a 24-page pamphlet was published and distributed during the past year.

This circular gives much practical and detailed information concerning this matter as well as the experience of many of the leading farmers of the State, who have realized benefits from thorough drainage.

The statistics published in this circular show over 1,800,000 acres of land in the State consisting mainly of low, flat lands; of swamps, bogs and lakes, the latter worthless in its present condition for agricultural purposes and rendering the surrounding country unhealthy by reason of its miasmatic atmosphere. When reclaimed, it is estimated these lands will be worth at least $40,000,000 00 more than they are now and will add that amount to the taxable property of the State.

The interest in drainage is comparatively in its infancy and can be greatly promoted and extended by the continuance of the work of the Board in this direction.

I would respectfully recommend that the scope of the work performed heretofore be enlarged to meet the probable demands.

DAIRY INTERESTS.

This important and rapidly increasing industry is attracting the attention of many of our most intelligent and enterprising farmers, more especially in the northern and central portions of the State.

The profit attending this business when compared with the growing of grain and the feeding of live stock for meat purposes is considered more favorable, in localities where the milk is sold to butter and cheese factories.

There are about two hundred butter and cheese factories in operation in the State, and the value of the annual product of these factories and milk condensing establishments is estimated to be over $2,000,000, and the value of all the dairy products of the State will doubtless more than double this amount.

The transactions of the Elgin Board of trade in butter and cheese amount to more than $1,000,000 per year. While the dairy business the past year has suffered somewhat from the general depression, dairymen as a class, the past few years have received fair remuneration for time and capital employed. The liberal encouragement by this Board of this industry in every possible way is suggested, and the collection and publication in pamphlet form, for general distribution, of statistical and practical information that will be of benefit to all engaged or interested in the business, is recommended.

STATISTICS RETURNED BY ASSESSORS.

The success of the first effort of the State to collect agricultural statistics by assessors has exceeded the expectations of all interested.

These statistics, although very incomplete, serve a valuable purpose as a basis for estimating the yield of various crops concerning which there has heretofore been no information

The importance and value of the statistics are conceded by all who have given the subject consideration, and with few exceptions the officials engaged in the collection thereof have heartily co-operated in the work of obtaining the most complete and accurate information concerning the crops grown in the State.

The principal difficulty reported by Assessors was the belief entertained by many farmers that the information called for had some influence in determining the amount of their taxes.

This question of agricultural statistics has been so thoroughly discussed the past year throughout the State by the press and otherwise that the general public is correctly informed as to the purpose and value of these facts and interested in having a complete inventory annually of the agricultural resources of the state.

The suggestions received from county clerks, assessors and farmers, and the experience of the past year will enable the board to make improvements in the classification and arrangement of the information desired, and thereby save in the future considerable work to clerks, assessors and farmers, and insure more complete and satisfactory returns.

The act authorizing the collection of agricultural statistics provides that the returns be published in the annual report of the department, which is necessarily delayed for reports which are not required by law until late in the year.

The great value of these statistics is enhanced by their early publication, and in addition to their appearance in the annual report I would suggest that they be prepared and distributed by the board in pamphlet form as soon as possible after the receipt of the returns from county clerks.

CORRESPONDENCE.

The foreign and domestic correspondence the past year has been of the most satisfactory and gratifying character, and exceeds in number and scope that of the previous years, with, it is believed, a corresponding benefit to the agricultural interests of the state.

The pleasant relations heretofore existing between the Department and all having business relations therewith have been, without exception, reciprocally increased during the year.

The progressive spirit manifested and the useful work performed by the Board in the interests of the industrial classes, have made many new and appreciative acquaintances and friends for the Department.

In addition to the printed circulars and other matter forwarded by mail, 2,824 letters have been written since the last annual meeting of the Board, many of which required considerable time in compiling the statistics and obtaining the information desired by the correspondents.

WORK OF THE OFFICE.

The work of the office the past year shows a healthy growth, and the increase in all the divisions of the various duties requiring attention can be fully appreciated only by an examination of the records of the office.

The annual reports, premium lists, crop reports, drainage circular, etc., received from the printer during the present year cover nearly 1,800 printed pages, which includes a vast amount of statistical work, requiring much time and care in its compilation.

The blanks, circulars, posters and other printed matter required in the regular work of the department—the State Fair and Fat Stock Show, are not included in the above.

The time required in the preparation of this matter—the proof reading and the distribution of the same throughout the State, has been performed with the aid of one assistant and occasional extra help to meet emergencies.

The number of copies of the various publications of the board distributed the past year will not fall far short of 40,000, making 498 packages shipped by express and freight, besides matter by mail.

The necessary delay each year, after the State Fair, in the publication of the annual reports of the department to enable county agricultural boards to prepare and forward their reports defers the official announcement of awards and other information concerning the exhibition, so long that it is practically of little value to exhibitors or the public except as a matter of history.

In order to meet the wishes of exhibitors, the press and parties interested in the awards, I would recommend the publication in pamphlet form of the list of entries and premiums awarded, and any other information of interest to exhibitors and the public as soon as possible after the close of the fair. This plan has been pursued in other states and has given satisfaction to all concerned. The early publication of this information would save this office much time now required to prepare duplicate lists of awards for agricultural papers and individuals.

DISTRIBUTION OF SEEDS.

The very limited supply of seeds received for distribution the past year is hardly worthy of mention.

It is suggested that the benefit to our agricultural interests resulting from the appropriation of a small amount each year by the board for the purchase for distribution of seeds of new and valuable varieties of farm products that can be grown to profit in this state, would prove to be a good investment.

I would respectfully recommend that the museum committee, or a special committee appointed for that purpose, be authorized to purchase, if necessary, such samples of our agricultural products as may be thought desirable to send to foreign nations who have signified their wish to exchange non-perishable products of the soil with this department.

ILLINOIS FAIRS.

The following table gives the total number of entries, amount of premiums offered, and amount paid at the fairs in Illinois during the last nine years so far as reported:

Years.	No fairs reported	No of entries	Amount premiums offered	Amount premiums paid.
1870	56	39,1[illegible]8	*$108,145	$85,154
1871	49	51,373	*117,381	92,426
1872	51	51,793	*105,396	82,989
1873	70	63,105	151,324	112,380
1874	89	89,763	206,481	145,401
1875	87	98,879	263,476	192,903
1876	93	96,648	230,250	154,043
1877	94	113,925	230,900	168,237
1878	90	108,488	224,907	154,116

*Estimated.

The above table makes a most favorable showing of the service performed by the people of the state through the medium of fairs in

developing the vast resources of Illinois, and is conclusive proof c the zeal and industry of the active managers of fairs who have give so liberally of their time and thought to the work of advancing th agricultural interests of their respective counties without other retur than the approval of the citizens of their localities.

EXHIBITIONS OF 1876, 1877 AND 1878 COMPARED.

The following table makes a much better showing for the fairs o 1878 than the unfavorable weather during a portion of the season fo holding fairs seemed to warrant.

Several of the societies holding fairs this year have not reporte(their transactions.

The reports of all the fairs held in 1878 would make the aggre gate number of entries, offerings and awards compare very favorabl with that of the previous year.

Departments	1876			1877			1878.		
	Number of entries in each department	Amount of premiums offered to each department	Amount of premiums paid to each department	Number of entries in each department	Amount of premiums offered to each department	Amount of premiums paid to each department	Number of entries in each department	Amount of premiums offered to each department	Amount of premiums paid to each department
A—Cattle	4,939	$37,682	$22,697	5,783	$38,323	$25,375	4 789	$38,036	$23,704
B—Horses	12,704	43,321	30,994	14,551	44,608	35,293	13,759	43,461	31,268
B—Mules and asses	1,102	5,721	3,134	1,256	5 777	3,537	1,064	5,006	2,869
C—Sheep	3 052	9,630	6,446	3,798	9,949	7 071	3 459	9,148	6,430
D—Hogs	6,990	18,386	12,433	7,502	18,751	13,958	6,325	18,011	12,458
E—Poultry	4,841	5,696	3,654	5,014	9,357	3,726	5 220	6,177	3,813
F—Mechanic arts	4,550	10,179	5,553	6 006	10 643	5,924	4,620	9,687	4,994
G—Farm products	13,032	11,813	7,278	16,600	11,201	7,897	12,981	9,451	6,240
H—Horticulture and floriculture	20,388	12,605	8,975	21,579	13,221	9,933	25,562	12,579	9,617
I—Fine arts	4,953	5,912	3,635	5,659	5,946	3,544	4,935	5,177	3,081
K—Textile fabrics	13,575	11,631	7,069	18,553	11,763	8,541	18,017	10,968	7,891
L—Natural history	..	..		.			284	1,088	488
M—Equestrianism	303	1,074	663	382	1,235	960	342	1,086	688
N—Education	. .	.			. .		418	641	432
Speed ring	1,761	54,347	39,578	2 020	48,320	38 920	1,939	48,496	36,193
Miscellaneous	4,458	2,223	1,934	4,462	4,280	3,395	4,769	5,905	3,950
Totals	96,648	$230,250	$154,043	113,925	$230,300	$168,237	108,483	$224,907	$154,116

It will be seen by the foregoing table that the munificent sum of nearly a quarter of a million dollars is offered annually by the friends of agriculture in Illinois to the enterprising people of the world as an incentive to exhibit to our citizens the best results in breeding stock, the skill and ingenuity of the inventor and manufacturer of labor-saving farm machinery and implements, the growing of the best specimens of agricultural products, etc.

The benefits to agriculture resulting from the attendance as visitors, or participation as exhibitors at the annual fairs by nearly three quarters

of a million of the most enterprising citizens in the state, cannot be computed.

The fairs of the state the past year represent over one hundred and eight thousand (108,483) entries.

It is greatly to the credit of our people that, notwithstanding the large and increasing competition at the State Fairs from year to year by the leading breeders, manufacturers, etc., of other states and Canada, the exhibiters residing in this state, on the superior merit of their exhibits, succeed in securing a very large proportion of the awards.

CAPITAL STOCK, PROPERTY, ETC.

The following table shows the aggregate amount of capital stock, membership and value, of the property of the agricultural organizations of the state for the past three years.

There has been considerable contraction in values of property, and a material reduction in the amount of capital in proportion to that on other kinds of property and business enterprises, a condition of affairs that could hardly be expected to be otherwise considering the general business depression of the country.

CONSOLIDATED EXHIBIT—STOCK, PROPERTY, ETC.	1876	1877	1878
of authorized capital stock	$486,900	$417,010	$363,085
Numbe of shares of stock issued . . .	22,378	26,216	21,698
Amoun of stock issued		$302,283	$288,246
Numbe of shareholders, or members .	20,341	18,850	16 246
Cash value of real estate and improvements thereon	$702,998	$668 627	$604,262
Numbe of volumes in library . .	847	1,426	619

The omission of several reports has made the foregoing table show for 1878 a greater reduction in the amount of capital stock than the facts would warrant, the same may be said of the reported value of the real estate and improvements.

FINANCIAL EXHIBIT.

The table presented herewith gives in aggregate the financial condition of the Fairs of the State held in 1876, 1877 and 1878.

Four societies included in the exhibit for the previous year are not represented in the 1878 statement which makes a difference in the balances brought forward.

The gross receipts for the Fairs of 1878 are less by $27,781 59 than for the previous year.

The reduced amount paid in 1878 in premiums ($13,451 01) as well as the reduction of the balance remaining in the treasury of Fair associations by $6,330 27 has enabled the agricultural organizations reporting to pay during the year $154,581 59 for premiums, $36,812 97 for real estate and permanent improvements and $84,295 09 for current expenses.

The amount ($36,812 97) paid for real estate and permanent improvements, may properly be considered as the surplus of the year's transactions, well invested in providing additional exhibition halls, stalls, pens, etc., and making grounds more attractive and convenient for the purpose of holding Fairs.

CONSOLIDTED FINANCIAL EXHIBIT.	1876		1877		1878.	
Amount in treasury, last report	....	$10,530 79	....	$15,850 18	....	$26,587 61
Am't deficit, last report, (including debt covered by mortgage	$27,097 33	.....	$119,824 34	....	$111,646 93	....
Amount received: Fees —(gate and entrance)	.. ..	175,075 48	....	234,331 81	..... .	203,440 74
Amount rec'd: Booth rents and permits	.. . ..	34,362 04	... . ..	33,783 35	....	34,558 47
Amount received, sale shares of stock.	.. . . ..	14,892 21	. .....	3 592 80	. ...	5,044 08
Amount received, state appropriations	... . .	... . .	....	10,050 00	. .. .	10,250 00
Amount received, other sources ..		46,227 44	. .	18,419 29	..	19 102 37
Am't paid, in premiums	150,287 98	. .	168,032 60	. .	154,581 59	....
Am't paid, for real estate buildings and permanent improvements	40,242 14	.....	34,374 62	. .	36,812 97	.. ...
Am't paid, for current expenses other than premiums	80,052 52	. ....	78,431 82	.	84,295 09	. ...
Am't remaining in treasury .	15,647 25	..	27,640 28	. .... .	21,310 01	.. ..
Am't deficit including debt covered by mortgage		32,434 45		112,363 28	.... ..	109,663 32
To balance . ..	195 19	.	87 05		...	. ..
Totals..	$313,522 41	$313,522 41	$428,390 71	$428,390 71	$408,646 59	$408,646 59

The 90 societies included in the above exhibit paid over two thousand ($2,438 35) dollars more for real estate and improvements and nearly six thousand ($5,864 27) dollars more for current expenses than the Fairs reporting the previous years.

The cash value of real estate and improvements owned by Fair Associations as given in a former table at a low valuation, amounts to over six hundred thousand ($604,262 00) dollars.

The property of county Fair organization is encumbered to the amount of over one hundred thousand ($109,663 32) dollars which, reduced by the amount ($21,310 01) remaining in treasury of the societies, makes the liabilities $88,353 31, nearly four thousand dollars ($3,630 31) more than the net deficiency of $84,723 00 at the close of the previous year.

PURE BRED STOCK EXHIBITED, 1878.

The following table shows the number of entries, amount of premiums offered and paid to the exhibitors of pure bred stock at the fairs held in the state during the past two years, so far as reported.

The failure of a considerable number of the fair associations to make complete reports concerning the exhibition of pure bred stock, makes it necessary to call attention to the fact that the table is far from being complete.

Thoroughbred stock.	1877.			1878		
	No of entries.	Amount of premiums offered	Amount of premiums paid	No of entries.	Amount of premiums offered	Amount of premiums paid
CATTLE—						
Shorthorn	2,206	$12,827	$10,514	1,961	$11,098	$8,361
Hereford	131	1,382	670	104	1,159	778
Holstein	125	1,180	502	137	1,690	726
Devon	164	1,933	598	151	2,066	931
Ayrshire	73	1,285	495	122	1,693	590
Jersey or Alderney	456	2,792	1,439	324	2,820	1,467
HORSES—						
Thoroughbred	662	4 382	2 253	358	3,815	2,208
*Roadster	1,488	7,855	6,353	1,423	7,319	6,086
Norman and French draft	644	3 364	2,360	540	2,086	1,238
Clydesdale and English draft	249	1,532	1,138	357	1,199	885
SHEEP—						
Cotswold	462	959	744	397	978	722
Leicester and other long wool	477	1,301	883	479	1,075	798
Southdown	354	1,017	844	349	1,204	740
American Merino	106	421	339	175	556	415
Spanish Merino and other fine wool	416	1,203	875	291	869	594
SWINE—						
Berkshire	1,650	4,019	3 018	1,352	3,927	2,826
Poland China	2 068	3,649	3,065	1,752	3,672	2,703
Chester White	537	2,339	1,420	604	2,197	1,437
Essex	147	602	528	116	769	450

*Include only high bred trotters and road horses.

The great value of the reports of pure bred stock exhibited at our fairs as showing the rapid progress made in the introduction throughout the state of the improved breeds of farm animals, and as furnishing desirable information concerning the best localities for would be purchasers to select the foundation of or make addition to pure bred herds and flocks, does not seem, as yet, to be fully appreciated by the secretaries of these associations.

It is hoped that future reports will show a nearer approximation to accuracy in these statistics.

RECEIPTS AND EXPENSES.

The legitimate expenses of Fairs are the most difficult questions which the directors have to consider.

The tendency of Fair associations is so great to run into debt and thus seriously interfere with the future usefulness of the organizations —that the directors cannot be too strongly impressed with the necessity of reducing the expense account to the lowest amount consistent with the best interests of the Fair.

The following table, showing the average the last three years of the financial exhibits of all the Fairs held in the State, (excepting the indebtedness), approximates a fair standard by which to judge of

the proportionate amount of receipts and expenses to be realized under ordinary circumstances from the holding of Fairs.

AVERAGE FINANCIAL EXHIBIT.	1876.		1877		1878.	
Amount in treasury, last report	. . . ..	$ 121 04	....	$ 168 61	.... . .	$ 295 42
Amount deficit, last report, (including debt covered by mortgage)	$ 311 46	.. ...	$1,274 82	.. ..	$1,240 52	.. .
Amount received; fees—(gate and entrance)	.. .. .	2,012 36	..... .	2,492 81	.. ...	2,260 45
Amount booth rents and permits	.....	393 00	... .	359 39	..	383 98
Amount received, sale shares of stock	. . .	171 00	. . .	38 22	.. .	56 04
Amount received, state appropriation.	.. .	.. .	. ...	. .		100 00
Amount received, other sources		531 00	.	295 94	.	226 13
Amount paid in premiums	1,785 00	.. . ..	1,787 58	.. .	1,717 57	.....
Amount paid, for real estate, buildings and permanent imp'mts	462 55	..	365 69	. .	409 03	. ...
Amount paid, for current expenses other than premiums	862 54	. .	834 38	. .	936 61	. ..
Amount remaining in treasury	178 85	. .. .	294 04		236 77	. ..
Amount deficit (including debt covered by mortgage)	...	372 00		1,201 54	. .	1,218 48
Totals	$3,600 40	$3,600 40	$4,556 51	$4,556 51	$4,540 50	$4 540 50

DISTRIBUTION OF PREMIUMS.

The inquiries as to the proper distribution of premiums to the end, that all the interests to be advanced by Fairs, may receive proper attention are less frequent each succeeding year, owing in part to the complete information published in the annual report of this department, concerning the Fairs held in this state.

The desire to make a favorable comparison with well conducted Fairs, has induced the managers of many societies to make a better distribution of premiums and thus enlist the co-operation of all classes, greatly to the improvement of the finances of the societies.

Until a better standard is presented it is safe to recommend the following distribution of premiums which represents the averages of all the Fairs held in the state during the last three years. While there is room for some criticism, the classification, proportioned to the amount of premiums deemed advisable for each society to offer—would be a great improvement over the classification adopted by the majority of the Fair associations of the state.

AVERAGE REPORT OF EXHIBITIONS FOR 1876, 1877 AND 1878

Departments	1876			1877.			1878.		
	No of entries in each department	Amount of premiums offered to each department.	Amount of premiums paid to each department.	No of entries in each department	Amount of premiums offered to each department.	Amount of premiums paid to each department.	No of entries in each department.	Amount of premiums offered to each department.	Amount of premiums paid to each department.
A—Cattle	57	$438	$263	61	$407	$269	53	$422	$263
B—Horses	147	503	360	154	474	375	153	483	348
B—Mules and asses	12	66	36	13	61	37	12	55	33
C—Sheep	35	112	75	40	105	75	38	102	73
D—Hogs	81	213	144	79	199	150	70	200	138
E—Poultry	56	66	42	53	67	40	58	68	43
F—Mechanic arts {Light machines, agricultural implements, stoves, castings, worked metals, household furniture, manufactures of various kinds, engines, machinery, etc., vehicles, sewing and knitting machines, etc., etc.}	53	118	64	64	113	65	51	107	56
G—Farm products {Grains, seeds, vegetables, butter, cheese, cakes, etc}	151	137	84	176	119	84	144	105	69
H—Horticulture and floriculture {Trees, fruits, flowers, plants, canned and preserved fruits, jellies, pickles, etc.}	237	146	104	229	140	105	284	139	107
I—Fine arts {Musical instruments, sculpture, painting, drawing, wax, feathers, hair work, etc}	57	69	42	60	63	37	55	57	35
K—Textile fabrics - Mill fabrics, household fabrics, needle work	157	135	82	197	125	90	200	122	88
L—Natural history {Botany, mineralogy, conchology, entomology, herpetology.}	...	...	...	...	...	...	3	12	5
M—Equestrianism	3	12	7	4	13	10	4	12	7
N—Education	...	...	...	...	...	...	5	7	5
Speed ring	20	631	460	21	514	414	21	538	408
Miscellaneous {For articles not proper to be classed in any of the above departments}	51	26	22	47	45	36	53	64	44
Totals	1,117	$2,672	$1,785	1,198	$2,445	$1,787	1,204	$2,493	$1,717

The number of entries, amount of premiums offered and paid by the Fairs in the State during the last two previous years, varies but little.

The increase over 1877 in the number of entries and the amount of premiums offered, is offset by the slight reduction in the amount of premiums paid in 1878.

GROSS RECEIPTS OF FAIRS, ETC.

The table presented herewith, gives the gross receipts of the Fairs held in the state in 1878, which are arranged according to the amount of receipts commencing with the largest sum.

The wide difference in the various expenses of Fairs in proportion to their receipts is evidence that there is no well defined rule governing such matters, and that the experience of the best managed Fairs has not been duly considered by a large number of the societies reporting.

The following table clearly illustrates this fact and shows the tendency to drift unconsciously with the popular current in providing purely sensational amusements without considering the consequences of such a course.

The results of such mis-management are not usually realized until the crisis is reached; and the farming community for whose benefit Fairs should be mainly conducted, become disgusted and withdraw necessary support.

The sympathy and interest in the success of Fairs by the better element of the community determines as a rule the amounts of gate receipts.

Number	Location of Fair. Town	County	Gross receipts, 1878	Per cent premiums paid to premiums offered A	Amount paid in premiums for each dollar of gross receipts B	Amount paid for current exp'ses to each dol p'd in premiums C	Am't p'd for speed purses for each dol. p'd in prem's to all e'parim'ts. D
1	Springfield	Sangamon	$12 504 11	$0 76	$0 46	$0 53	$0 29
2	Jerseyville	Jersey	7,401 75	90	57	58	19
3	Peoria	Peoria	6,854 42	74	46	28	23
4	Wenona	Marshall	6,666 56	88	57	47	18
5	Rockford	Winnebago	6,331 10	82	43	76	42
6	Cambridge	Henry	5,897 30	78	49	48	51
7	Carrollton	Greene	5,770 60	85	30	2 01	10
8	Joliet	Will	5,675 61	73	28	2 36	23
9	Lincoln	Logan	5,444 85	89	70	26	30
10	Bloomington	McLean	5,057 04	48	34	1 84	22
11	Petersburg	Menard	4 764 14	57	45	88	46
12	Jacksonville	Morgan	4,590 85	85	71	23	22
13	Monmouth	Warren	4,437 90	90	73	29	24
14	Ottawa	LaSalle	4,401 65	55	61	74	8
15	Carlinville	Macoupin	4,379 50	84	64	62	38
16	Sterling	Whiteside	4,346 22	73	40	66	17
17	Fairbury	Livingston	4,262 33	79	62	35	25
18	Camp Point	Adams	4,215 40	89	52	49	8
19	Macomb	McDonough	4,133 50	78	75	40	6
20	Chester	Randolph	4,114 95	78	65	32	34
21	Danville	Vermilion	4,105 64	59	50	38	46
22	Princeton	Bureau	3,871 58	81	60	52	23
23	Toulon	Stark	3,810 85	70	61	56	4
24	Paris	Edgar	3,728 45	87	67	28	6
25	Pittsfield	Pike	3 693 17	80	56	46	29
26	Rochelle	Ogle	3,544 05	65	46	38	31
27	Avon	Fulton	3 467 65	72	55	52	31
28	Aledo	Mercer	3,405 20	79	59	43	10
29	Sparta	Randolph	3,247 05	62	49	1 04	23
30	Morrison	Whiteside	3,116 30	88	43	91	15

Gross Receipts—Continued.

Number	Location of Fair. Town	County	Gross receipts, 1878	Per cent premiums paid to premiums offered. A	Amount paid in premiums for each dollar of gross receipts B	Amount paid for current exp'ses to each dol p'd in premiums C	Am't p'd for spe'd purses for each dol p'd in pr'ms to all dep'rtm'ts D
31	Knoxville	Knox	2 976 25	78	77	41	18
32	Atlanta	Logan	2,950 12	75	66	36	12
33	Pinckneyville	Perry	2,941 75	67	28	24	53
34	Hoopeston	Vermilion	2,908 82	74	53	38	20
35	Virginia	Cass	2,878 76	86	82	38	18
36	Rushville	Schuyler	2,857 50	65	50	23	27
37	Shawneetown	Gallatin	2 768 20	76	70	28	51
38	Decatur	Macon	2,677 00	59	65	17	20
39	Morris	Grundy	2,538 03	56	65	49	30
40	Monticello	Piatt	2,507 65	75	63	40	47
41	Olney	Richland	2,502 50	70	72	20	39
42	Canton	Fulton	2,422 76	22	38	1 55	25
43	Centralia	Marion	2,405 00	78	59	46	12
44	Mt Sterling	Brown	2,355 50	76	67	56	22
45	Belvidere	Boone	2,333 87	51	49	51	33
46	Charleston	Coles	2, 02 53	79	73	32	17
47	Warren	JoDaviess	2 295 34	83	37	65	62
48	Champaign	Champaign	2,262 20	..	20	58	
49	Jonesboro	Union	2,233 60	83	70	37	..
50	Shelbyville	Shelby	2,128 74	71	66	15	6
51	Albion	Edwards	2 126 63	72	59	45	18
52	Marion	Williamson	2,064 20	77	55	34	39
53	Mt. Vernon	Jefferson	2,034 38	81	65	29	...
54	Kankakee	Kankakee	1,973 95	59	51	96	14
55	Clinton	DeWitt	1 911 81	35	42	77	19
56	Galena	JoDaviess	1,810 30	59	64	61	15
57	Havana	Mason	1,786 50	67	71	32	33
58	Robinson	Crawford	1,694 35	50	51	14	21
59	Mt Carroll	Carroll	1,656 00	67	51	69	23
60	Mt Carmel	Wabash	1,586 10	50	65	33	40
61	Biggsville	Henderson.	1,552 20	72	80	21	21
62	Benton	Franklin	1,527 65	65	48	37	21
63	Oregon	Ogle	1,519 45	41	54	86	14
64	Onargo	Iroquois	1,503 68	35	31	1 42	31
65	Fairfield	Wayne	1,495 29	53	56	56	21
66	Woodstock.	McHenry	1 492 46	28	30	..	.
67	Aurora	Kane	1,480 70	42	66	50	44
68	Marengo	McHenry	1,313 58	46	52	54	18
69	Vandalia	Fayette	1,289 40	69	57	56	7
70	Tuscola	Douglas	1,275 01	16	24	69	11
71	Sycamore	DeKalb	1,264 50	51	61	53	15
72	Elizabethtown	Hardin	1,232 93	51	65	38	46
73	Metropolis	Massac	1,222 20	65	39	1 09	4
74	Newton	Jasper	1,190 00	48	84	17	57
75	Hennepin	Putnam	1,188 60	67	67	71	26
76	Wheaton	DuPage	1,130 10	75	86	27	23
77	Marshall	Clark	1,115 00	73	69	.	25
78	Taylorville	Christian	1,023 07	41	109	21	. ...
79	Majority Point	Cumberland	1,005 10	38	37	28	35
80	DeKalb	DeKalb	1,004 00	58	63	57	47
81	Paxton	Ford	930 00	38	75	11	33
82	Sullivan	Moultrie	919 70	36	71	39	13
83	Bristol	Kendall	908 40	27	56	56	. .
84	Murphysboro	Jackson	818 00	43	80	14	30
85	Lawrenceville	Lawrence	788 00	38	58	42	77
86	Albany	Whiteside	778 65	62	45	75	30
87	Golconda	Pope	721 60	57	68	19	9
88	Libertyville	Lake	557 93	45	58	66	25
89	Louisville	Clay	429 50	32	85	11	11

The column "A," in the above table shows the per cent. of premiums paid to premiums offered, *e. g.* The first fair named paid 76 cents on each dollar offered, the remaining 24 cents represented premiums not taken there being no competition therefor.

The column shows a range of from 16 to 90 per cent. of premiums paid to premiums offered. The smaller amounts represent some societies that were unfortunate on account of bad weather and could pay only a portion of the premiums awarded.

The consolidated statements of fairs of the State show a very large amount offered in premiums for articles for which there is no entries or competition, and consequently no premiums paid. The average amount paid by all the fairs in the state is 73 cents for each 100 cents offered in premiums.

The column "B" shows the proportionate amount paid in premiums for each dollar of gross receipts, *e. g.*, the first named society paid but 46 cents in premiums to each 100 cents received from all sources, leaving 54 cents for improvements, surplus, etc.

The societies of the state, in 1878, paid an average of 56 per cent. of the gross receipts for premiums, showing that under present management nearly half (44 per cent.) the gross receipts of the fairs of the state are used to pay expenses

This ratio (44 per cent.) of expense to gross receipts is largely in excess of the average of a respectable number of the best managed fairs in the state, and managers of fairs will serve the interests of their organizations by giving this matter the attention its importance demands.

The column "C" gives the comparative amount of premiums paid to current expenses *e. g*, the first named society paid 53 cents as expenses to each 100 cents awarded in premiums.

It will be seen that the expenses of some societies greatly exceed the amount of premiums paid. In cases where only a pro-rata of the premiums awarded are paid, owing to unfavorable weather or additional improvements having been provided—these large ratios of expense can be explained satisfactorily; but with a well proportioned list and economical management, the rates of expenses to premiums paid under favorable circumstances are reported above as low as 11 cents paid for expenses to each 100 cents paid as premiums.

The average for the fairs of the state the past season is 54 cents paid as expenses to each 100 cents paid in premiums.

The column "D" gives the proportionate amoun paid for speed premiums to the total amount paid as premiums to all the other departments.

The wide range in the amounts paid for speed premiums is worthy of special consideration.

It will be seen that while some societies do not offer premiums for speed, other societies go to the other extreme and to the neglect of important interests devote nearly two-thirds of the amount paid in premiums in providing for speed and sensational amusements.

The average amount paid by all the societies in the state for speed premiums is a fraction over 21 per cent., leaving 79 per cent. for all other departments.

IMPROVEMENTS AND BALANCES.

The following table gives in order of amount the cost for improvements and the balances remaining in the treasuries of Fair associations at the close of the year 1878.

The total amount paid by the societies of the state for improvements during the year is $36,812, 97, which exceeds the expenditure for improvements the previous year by $2,438 35.

The balances in the treasuries are less by $6,330 27 than for the previous year, which is a much more favorable showing than might be expected considering the unfavorable weather during the months for holding fairs, which reduced the gate receipts nearly $30,000, 00 when compared with 1877.

Illinois Fairs arranged according to amount paid for real estate, buildings and permanent improvements in 1878, *also amount remaining in treasury at close of* 1878.

Number	Location of Fair. Town.	Location of Fair. County	Amount paid in 1878 for real estate, build'gs, etc	Number	Location of Fair Town.	Location of Fair County	Am't remaining in treasury at close of 1878.
1	Springfield	Sangamon	$3,642 53	1	Peoria	Peoria	$3,423 00
2	Rochelle	Ogle	2,570 50	2	Rockford	Winnebago	2,218 88
3	Pinckneyville	Perry	1 454 12	3	Paris	Edgar	957 00
4	Shelbyville	Shelby	1,397 11	4	Ottawa	LaSalle	855 21
5	Marion	Williamson	1,270 00	5	Wenona	Marshall	787 55
6	Rushville	Schuyler	1,261 00	6	Pittsfield	Pike	646 80
7	Wenona	Marshall	1 235 85	7	Danville	Vermilion	639 74
8	Peoria	Peoria	1,200 25	8	Carrollton	Greene	595 33
9	Oregon	Ogle	1,111 87	9	Morrison	Whiteside	574 76
10	Champaign	Champaign	1,050 00	10	Toulon	Stark	547 06
11	Woodstock	McHenry	1,041 71	11	Metropolis	Massac	456 93
12	Camp Point	Adams	996 65	12	Mt Vernon	Jefferson	401 32
13	Avon	Fulton	995 81	13	Centralia	Marion	397 92
14	Morris	Grundy	954 27	14	Bloomington	McLean	359 52
15	Danville	Vermilion	900 00	15	Pinckneyville	Perry	346 63
16	Tuscola	Douglas	772 00	16	Albion	Edwards	343 96
17	Shawneetown	Gallatin	719 15	17	Olney	Richland	321 48
18	Newton	Jasper	700 00	18	Cambridge	Henry	272 61
18	Petersburg	Menard	700 00	19	Princeton	Bureau	264 85
19	Fairbury	Livingston	690 75	20	Benton	Franklin	251 26
20	Paris	Edgar	673 57	21	Chester	Randolph	195 35
21	Jerseyville	Jersey	650 00	22	Jerseyville	Jersey	176 73
22	Mt Sterling	Brown	607 34	23	Rochelle	Ogle	166 30
23	Jonesboro	Union	600 00	24	Robinson	Crawford	125 46
23	Decatur	Macon	600 00	25	Camp Point	Adams	115 32
24	Monticello	Piatt	587 46	26	Lawrenceville	Lawrence	110 00
25	Onarga	Iroquois	576 54	27	Shawneetown	Gallatin	87 80
26	Atlanta	Logan	527 48	28	Havana	Mason	69 66
27	Aledo	Mercer	504 80	29	Avon	Fulton	60 97
28	Hoopestown	Vermilion	484 00	30	Sterling	Whiteside	60 00
29	Belvidere	Boone	455 25	31	Majority Point	Cumberland	56 00
30	Cambridge	Henry	451 44	32	Canton	Fulton	49 76
31	Clinton	DeWitt	398 35	33	Shelbyville	Shelby	44 51
32	Robinson	Crawford	396 44	34	Clinton	DeWitt	44 45
33	Galena	JoDaviess.	386 60	35	Belvidere	Boone	44 06
34	Princeton	Bureau	367 31	36	Marshall	Clark	44 00
35	Benton	Franklin	337 79	37	Jacksonville	Morgan	40 82
36	Chester	Randolph	330 00	38	Springfield	Sangamon	37 49
37	Marshall	Clark	280 00	39	Aledo	Mercer	35 12
38	Marengo	McHenry.	250 00	40	Champaign	Champaign	35 00
39	Virginia	Cass	229 70	41	Decatur	Macon	32 75
40	Rockford	Winnebago	200 00	42	Morris	Grundy	23 95
41	Sycamore	DeKalb	185 00	43	Petersburg	Menard	20 13
42	Mt. Vernon	Jefferson	152 75	44	Atlanta	Logan	11 84
43	Lincoln	Logan	150 00	45	Libertyville	Lake	11 38
43	Paxton	Ford	150 00	46	Elizabethtown	Hardin.	10 57

Improvements and Balances—Continued.

Number	Location of Fair. Town.	County.	Amount paid in 1878 for real estate, buildi'gs, etc.	Number	Location of Fairs. Town.	County.	Am't remaining in treasury at close of 1878.
44	Kankakee	Kankakee	$126 00	47	Charleston	Coles	$10 32
45	Knoxville	Knox	125 00	48	Marion	JoDaviess	10 00
45	Biggsville	Henderson	125 00	49	Wheaton	DuPage	7 08
46	Charleston	Coles	118 15	50	Tuscola	Douglas	4 41
47	Fairfield	Wayne	112 23	51	Fairbury	Livingston	3 24
48	Albion	Edwards	112 01	52	Rushville	Schuyler	2 00
49	Canton	Fulton	109 02	53	Albany	Whiteside	1 05
50	Mt. Carmel	Wabash	100 50	54	Vandalia	Fayette	1 00
51	Jacksonville	Morgan	100 00	55	Marion	Williamson	
52	Elizabethtown	Hardin	96 60	55	Oregon	Ogle	
53	Murphysboro	Jackson	85 05	55	Woodstock	Marengo	
54	Morrison	Whiteside	77 80	55	Newton	Jasper	
55	Toulon	Stark	75 00	55	Mt Sterling	Brown	
56	Joliet	Will	73 97	55	Jonesboro	Union	
57	Havana	Mason	67 50	55	Monticello	Platt	
58	Hennepin	Putnam	40 00	55	Onarga	Iroquois	
59	Centralia	Marion	22 39	55	Hoopestown	Vermilion	
60	Vandalia	Fayette	21 91	55	Galena	JoDaviess	
61	Lawrenceville	Lawrence	20 00	55	Marengo	McHenry	
62	Bristol	Kendall	9 45	55	Virginia	Cass	
63	Carrollton	Greene		55	Sycamore	DeKalb	
63	Bloomington	McLean		55	Lincoln	Logan	
63	Monmouth	Warren		55	Paxton	Ford	
63	Ottawa	LaSalle		55	Kankakee	Kankakee	
63	Carlinville	Macoupin		55	Knoxville	Knox	
63	Macomb	McDonough		55	Biggsville	Henderson	
63	Pittsfield	Pike		55	Fairfield	Wayne	
63	Sparta	Randolph		55	Mt Carmel	Wabash	
63	Olney	Richland		55	Murphysboro	Jackson	
63	Warren	JoDaviess		55	Joliet	Will	
63	Mt Carroll	Carroll		55	Hennepin	Putnam	
63	Aurora	Kane		55	Bristol	Kendall	
63	Metropolis	Massac		55	Monmouth	Warren	
63	Wheaton	DuPage		55	Carlinville	Macoupin	
63	Taylorville	Christian		55	Macomb	McDonough	
63	Majority Point	Cumberland		55	Sparta	Randolph	
63	DeKalb	DeKalb		55	Mt Carroll	Carroll	
63	Sullivan	Moultrie		55	Aurora	Kane	
63	Albany	Whiteside		55	Taylorville	Christian	
63	Golconda	Pope		55	DeKalb	DeKalb	
63	Libertyville	Lake		55	Sullivan	Moultrie	
63	Louisville	Clay		55	Golconda	Pope	
63	Sterling	Whiteside		55	Sterling	Whiteside	
			$36,812 97				$21,310 01

The above statement makes a much more favorable showing for new fair organizations, constructing their exhibition halls, stalls, pens, etc., when compared with societies that have in past years provided ample accommodations, and expend annually only such amounts for improvements as may be necessary to keep up repairs.

PREMIUMS PAID.

The amount of premiums paid by the fair associations of the state is largely influenced by the gate receipts which are large or small, owing to the density of population accessible to the place of holding the fair and the efforts put forth by the officers and citizens to secure the attendance of the greatest possible number of people.

An earnest and determined spirit manifested by the community to have a creditable fair is all that is necessary to ensure success in any county in the state under ordinary circumstances.

On the stockholders or members of the agricultural organizations rests the great responsibility of selecting officers who can secure the hearty co-operation of all the desirable elements of society in the work of advancing the general interests of agriculture in the different counties, through the most efficient agency—that of properly conducted agricultural fairs.

That the attendance at fairs is largely the result of the attractions provided by the board of directors in the list of premiums, and the efforts to increase the gate receipts, is attested by the result in many small counties which have the larger exhibitions and pay handsome premiums without drawing upon their accumulated funds.

The following table gives the premiums paid by the societies in 1878, which are arranged according to the amount so paid, the figures in the three columns on the right give the rank or order in the amount paid by these societies in premiums for the years 1877, 1876 and 1875.

Number	Location of Fair		Amount premiums paid 1878	Order as to am't paid 1877	Order as to am't paid 1876	Order as to am't paid 1875
	Town	County				
1	Springfield	Sangamon	$5,752 50	1	13	5
2	Jerseyville	Jersey	4,281 00	3	4	8
3	Wenona	Marshall	3,861 00		6	11
4	Lincoln	Logan	3,814 50	6	2	14
5	Jacksonville	Morgan	3,278 75	14	15	19
6	Monmouth	Warren	3,276 50	24		20
7	Peoria	Peoria	3,177 75	7	1	3
8	Macomb	McDonough	3,122 50	4	17	46
9	Cambridge	Henry	2,912 00	11	14	22
10	Carlinville	Macoupin	2,833 50	15	24	30
11	Rockford	Winnebago	2,74[illegible] 50	16	11	15
12	Chester	Randolph	2,705 80	9	12	16
13	Ottawa	LaSalle	2,689 50	32		. . .
14	Fairbury	Livingston	2,647 90	27	42	. . .
15	Paris	Edgar	2,523 50	21	19	13
16	Virginia	Cass	2,379 75	30	22	26
17	Princeton	Bureau	2,359 00	20	49	9
18	Toulon	Stark	2,334 70	28	25	38
19	Knoxville	Knox	2,300 00	17	85	72
20	Camp Point	Adams	2 214 00	25	27	. .
21	Petersburg	Menard	2,153 25	8	65	36
22	Pittsfield	Pike	2,085 50	29	35	39
23	Danville	Vermilion	2,063 00	18	32	. . .
24	Atlanta	Logan	1,968 75	22	20	23
25	Shawneetown	Gallatin	1,961 25	46	43	. . .
26	Aledo	Mercer	1,948 00	33	23	32
27	Avon	Fulton	1,938 00	23	28	27
28	Olney	Richland	1,817 00	. . .	. . .	. .
29	Carrollton	Greene	1,781 50	41	41	33
30	Sterling	Whiteside	1,746 90	12	21	29
31	Decatur	Macon	1,740 70	19	3	21
32	Bloomington	McLean	1,737 00	10	9	10
33	Charleston	Coles	1,682 50	35	33	37
34	Rochelle	Ogle	1,662 50	37	39	31
35	Morris	Grundy	1,657 30	43	75	79
36	Sparta	Randolph	1,607 25	36	29	42
37	Mt Sterling	Brown	1,592 00	34	36	47
38	Joliet	Will	1,591 00	13	16	28
39	Monticello	Piatt	1,588 50	60	. . .	81
40	Jonesboro	Union	1,581 75	50	51	61
41	Hoopeston	Vermilion	1,559 00	39	46	. . .
42	Rushville	Schuyler	1,442 50	45	38	43
43	Centralia	Marion	1,425 25	. . .	. . .	. . .
44	Shelbyville	Shelby	1,414 50	40	37	45
45	Morrison	Whiteside	1,365 25	. . .	. . .	. . .

Premiums Paid—Continued.

Number.	Location of Fair. Town.	County.	Amount premiums paid 1878	Order as to am't 1877.	Order as to am't 1876.	Order as to am't 1875.
46	Mt Vernon	Jefferson	1,335 00	64	78	64
47	Havana	Mason	1,281 00	65	31	59
48	Albion	Edwards	1,275 25	63	54	62
49	Biggsville	Henderson	1,256 75	47	47	54
50	Galena	JoDaviess	1,173 45	44	26	25
51	Belvidere	Boone	1,147 75	53	44	49
52	Marion	Williamson	1:137 00	70	64	67
53	Taylorville	Christian	1,124 00	49	55	41
54	Mt Carmel	Wabash	1,033 50	.....	50	52
55	Kankakee	Kankakee	1,011 60	51	63	58
56	Newton	Jasper	1,000 00	66	83	74
57	Aurora	Kane	985 40	55	....	.....
58	Wheaton	DuPage	975 25	82	77	83
59	Canton	Fulton	941 66	.....	7	6
60	Robinson	Crawford	872 00	80	61	63
61	Warren	JoDaviess	854 00	59	66	50
62	Mt Carroll	Carroll	849 80	31	34	35
63	Pinckneyville	Perry	848 00	84	72	78
64	Fairfield	Wayne	841 00	79	45	51
65	Oregon	Ogle	833 00	61	59	48
66	Clinton	DeWitt	816·20	38	30	17
67	Elizabethtown	Hardin	811 90	75	71	75
68	Hennepin	Putnam	808 00	87	57	71
69	Sycamore	DeKalb	785 00	77	73	76
70	Marshall	Clark	780 00	72	.....	87
71	Benton	Franklin	747 00	74	67	80
72	Vandalia	Fayette	741 75	68	56	65
73	Majority Point	Cumberland	712 00	62	62	77
74	Paxton	Ford	700 00	76	69	56
75	Marengo	McHenry	691 00	78	80	.....
76	Murphysboro	Jackson	660 85	83	73	88
77	Sullivan	Moultrie	659 70	56	68	47
78	DeKalb	DeKalb	637 00	71	.....	68
79	Bristol	Kendall	514 20	73	79	55
80	Golconda	Pope	491 85	81	74	82
81	Metropolis	Massac	478 00	..	84	.....
82	Onarga	Iroquois	476 40	67	70	70
83	Champaign	Champaign	472 59	57	10	34
84	Lawrenceville	Lawrence	463 00	88	.....	73
85	Woodstock	McHenry	450 75	52	48	53
86	Louisville	Clay	368 90	....	81	89
87	Albany	Whiteside	354 00	90		.....
88	Libertyville	Lake	328 95	85	82	84
89	Tuscola	Douglas	304 00	69	76	.....
	Farmer City	DeWitt		2	5	4
	Pontiac	Livingston		54	.....	57
	Waukegan	Lake		5	.	12
	Flora	Clay		26	40	18
	Catlin	Vermilion		42	58	40
	Sandwich	DeKalb		58	8	...
	Hillsboro	Montgomery		86	60	60
	Dixon	Lee		89	.....	.....
	Port Byron	Rock Island		91	18	.....
	Belleville	St Clair			52	24
	Freeport	Stephenson			53	69
	Payson	Adams				66
	Quincy	Adams				1
	Effingham	Effingham				88
	Gibson City	Ford				44
	Watseka	Iroquois				86
	Geneva	Kane				85
	Galesburg	Knox				2
	Salem	Marion				86
	Rock Island	Rock Island				7

It will be seen by the numbers in the columns on the right that the best managed fairs not only sustain their rank from year to year but are steadily increasing the amount of premiums paid and attaining a prominence among the fairs of the state worthy of emulation.

The fair at the head of the table was fifth in the order of amount of premiums paid in 1875, thirteenth in 1876 and first in 1877 and 1878.

PERSONAL.

In submitting this, my fourth annual report, permit me to tender to each member of the board my grateful acknowledgments for frequent and timely suggestions as well as for the confidence and consideration manifested by you at all times which I can assure you I greatly appreciate.

I avail myself of this opportunity for mentioning the valuable services performed by my faithful and efficient assistant, Mr. Charles F. Mills, who has given entire satisfaction in the discharge of the duties assigned him.

CONCLUSION.

In this report I have given only an outline of such portions of the work of the department as considered worthy of your special attention and deserving of space in the annual report, and not presented in the reports of the several committees co-operating with your secretary in the discharge of the various duties of this office.

All of which is respectfully submitted.

S. D. Fisher,
Secretary.

INDEX.

PAGE.

Address of President Gillham 186
Advertising for proposals for holding State Fair 64
Agricultural reports from other States 144
Agricultural Fairs in Illinois, 1878—
  Capital stock, real estate, value of improvements 237
  Financial exhibit 234
  Pure bred stock 240
  Table of entries, premiums offered and paid by each Association 222
Agricultural statistics 328
Agricultural statistics for 1877, returned by assessors 405
Agricultural Union, Second Annual Meeting—
  Address to County Fair Associations 386
  C F Mills made secretary 383
  Constitution and by-laws adopted 384
  Communication to County Fair Associations 386
  Election of officers 385
  Report of committee on credentials 383
Annual Meeting of State Board of Agriculture, Springfield, Jan 7th, 1879 106
Annual session of Wool Growers' Association 1878 296
Annual session of Swine Breeders' Association 300
Arrangements and rules governing Fat Stock Show 61, 107, 114
Auditing committee's report 124
Awards on miscellaneous entries, report of committee 153
Awards at State Fair -
  Class A—Cattle 8
  Class B—Horses and Jacks 14
  Class C—Sheep 21
  Class D—Swine 23
  Class E—Poultry 27
  Class F—Mechanic Arts 37
  Class F—Mechanic Arts, sec 2 38
  Class G—Farm products 39
  Class H—Horticulture 43
  Class H—Horticulture, sec 2 48
  Class I—Fine Arts 52
  Class K—Textile Fabrics 53
  Class L—Natural History 58
  Class M—Equestrianism 59
  Class N—Education 59
Awarding Committees Fat Stock Show 69, 94

Breeding of animals exhibited 72

Canada thistles—reports from commissioners 381
Committees appointed—
  Advertise Fat Stock Show 4
  Complete arrangements for Fat Stock Show 113
  Complete arrangements for use of exhibition building 115
  Distribution of funds appropriated for premiums 118
  Make arrangements for stalls for Fat Stock Show 4
  Programme for evening meetings 182
  Revise specifications of requirements for accommodation of departments 64
  Rules and regulations for Fat Stock Show 109
  Secure rates with R R companies for transportation of passengers and stock to Fat Stock Show 109
  Solicit subscriptions from stock yards, hotels and agricultural press 116
  Supervise the publication of prize list for Fat Stock Show 118
  Visiting stock yards to solicit subscriptions for premiums 115
Challenge cup 122
Committees appointed by the President 106, 182
Committee on measurement 70
Communications from—
  John B Drake 64
  Vice President Smith 112
Contract of the State Board for use of exhibition building 116

PAGE.

Crop prospects—
May 1st, 1878 ... 309
June 1st, 1878 ... 312
July 1st, 1878 ... 315
August 1st, 1878 ... 318
Crops of 1878 ... 323
Corn crop of 1878 compared with other years—table of statistics ... 324
Crop correspondents, names and post office address of ... 331
Crop statement, average yield 1878—table of statistics ... 356
Crop statements by counties for 1878 ... 356
Acres in cultivation ... 365
Acreage compared with 1877 ... 367
Apple orchard, statement of J. B. Spaulding ... 380
Hog product, 1878 ... 373
Hog cholera ... 377
Value of principal crops in 1878 ... 370

Dairy interest ... 433
Delegate convention on Fair grounds at Freeport, 1878 ... 5
Departments in exhibition at State Fair ... 221
Distribution of premiums ... 440
Distribution of seeds ... 435

Election of President and members of State Board of Agriculture for 1879-80 ... 7
Emery appointed by the President to read Prof Worthen's paper ... 2
Expense of crop reports ... 308
Exhibition of 1876, 1877 and 1878 compared ... 436

Fat Stock Show Report—
Awarding committees ... 69
Awarding committee on Class A—cattle ... 94
Breeding of animals exhibited ... 72
Committee on measurement ... 70
Premiums awarded—
Class A—Cattle ... 102
Class C—Sheep ... 103
Class D—Swine ... 104
Class E—Poultry ... 105
List of exhibitors ... 67
Table of weights and measurements ... 79
Field crops, report of committee on ... 176
Financial exhibit—Fairs held 1876, 1877 and 1878 ... 437
Financial exhibit—State Fair 1878 ... 221

Grains, seed and vegetables—report of committee on ... 174

Horticultural display ... 175

Incidents and accidents on the farm—by N. H Paaren, M D, V S—
Sows eating their pigs—discussion of some of the causes ... 400
Scab in sheep, treatment of ... 401
Illinois State Dairymen's Association ... 259
Illinois Wool Growers' Association, 1877 ... 287
Illinois Wool Growers' Association, 1878 ... 296
Illinois Swine Breeders' Association ... 300

List of Prizes for Fat Stock show—
Class A—Cattle ... 119
Class C—Sheep ... 120
Class D—Swine ... 121
Class E—Poultry ... 122

Meetings of the State Board—
Freeport, September 16, 1878 ... 1
Fair Grounds, September 19, 1878 ... 2
Brewster House, Freeport, September 19, 1878 ... 2
Brewster House, Freeport September 20, 1878 ... 3
Springfield, January 7, 1879 ... 106
Springfield, January 8, 1879 ... 153
Meetings during Fat Stock Show—
Chicago, December 2, 1878 ... 61
Chicago, December 3, 1878 ... 62
Chicago, December 4, 1878 ... 63
Chicago, December 6, 1878 ... 63
Meteorological reports for 1878 ... 334
Minutes of the meeting of committee of arrangements ... 107
Minutes of the meeting of sub-committee ... 144
Mineral resources of Illinois ... 388

Officers of State Fair and Fat Stock Show ... 221

President's address ... 186
President made chairman of committee on invitation ... 106
President appoints committees ... 106
President appoints Mr. Emery to read Prof. Worthen's paper ... 2

PAGE

Premiums offered 108
Premiums awarded 102
Premiums paid 446
Prize list 109
Protest entered by W H Lightfoot 182
Protest entered by E Dillon & Co 2
Protest entered by L M Newell 8
Protest informal of Messrs Strawn, Jackson & Co 3
Pure bred stock exhibited, 1878 438

Resolutions offered by Messrs —
Scott 2, 122
Beaty 63, 152
Cobb 106
Emery 112
Haskell 113
Ellsworth 123
Dysart 152
Douglas 182
Resolutions relating to—
Changes required by committee of arrangements 123
Committee of arrangements for Fair of 1878 113
Invitations to State officials to visit Agricultural Museum 106
Miscellaneous awards at State Fair of 1878 152
Premiums offered by Live Stock Journal Company 122
Premium list of Fat Stock Show 112
Receiving reports of superintendents of departments 152, 156, 182
Removal of horticultural and farm products damaged by rain 2
Thanks to retiring members 182
Thanks of the Board to M Gilbert & Co for use of scales 63
Vouchers for State binding 124

Reports from special committees—
Arrangement and rules governing Fat Stock Show 61 107
Aquaria charge and sale of 173
Completion of arrangements for Fat Stock Show 114
Damage sustained at State Fair 173
Distribution of seeds 156
Fat Stock Show premium plate 149
Field crops 176
Grains seeds and vegetables 174
Horticultural display 175
Miscellaneous awards 153
Native wine cider vinegar etc 174
President Gillham chairman of committee of arrangements 152
Railroad arrangements for State Fair 1878 148
Road making 180
Rules and regulations for Fat Stock Show 61, 107, 110
Secretary s report 151
Specifications of requirements of localities bidding for the State Fairs of 1879-80 150
Securing reduced rates with railroad companies 115
Soliciting funds at the Union stock yards 115 118
Railroad arrangements for Fat Stock Show, 1878 148 116
Railroad arrangements for State Fair 1878 148
Rules and regulations for Fat Stock Show 110
Reports relating to Fat Stock Show 182
Report of treasurer 184
Report of committee on crop statistics 308

Reports from Standing committees—
Auditing 124
Crop statistics 149, 308
Fat Stock Show premium plate 149
Farms and orchards 126
Finance 186
Museum 130
Library 136
Printing 129
Scientists 151
Transportation 147

Reports from County Agricultural Boards—
Adams county 191
Boone county 191
Brown county 192
Bureau county 192
Carroll county 192
Cass county 193
Champaign county 193
Christian county 193
Clark county 194
Clay county 194
Coles county 194
Crawford county 195
Cumberland county 195

PAGE

DeKalb county, Sycamore Branch 195
DeKalb county, DeKalb Branch 196
Dewitt county 196
Douglas county 196
DuPage county 197
Edgar county 197
Edwards county 197
Fayette county 198
Ford county 198
Franklin county 198
Fulton county, Canton 199
Fulton county, Avon 199
Gallatin county 199
Green county 200
Grundy county 200
Hardin county 200
Henderson county 201
Henry county 201
Iroquois county 201
Jackson county 202
Jasper county 202
Jefferson county 202
Jersey county 203
JoDaviess county, Galena branch 203
JoDaviess county, Warren branch 203
Kane county 204
Kankakee county 204
Kendall county 204
Knox county 205
Lake county 205
Lasalle county 205
Lawrence county 206
Livingston county 206
Logan county, Lincoln branch 206
Logan county, Atlanta branch 207
Macon county 207
Macoupin county 207
Marion county, Centralia 208
Marshall county, Wenona 208
Mason county 208
Massac county 209
McDonough county 209
McHenry county, Woodstock 209
McHenry county, Marengo 210
McLean county 210
Menard county 210
Mercer county 211
Morgan county 211
Moultrie county 211
Ogle county, Oregon 212
Ogle county Rochelle 212
Peoria county 212
Perry county 213
Piatt county 213
Pike county 213
Pope county 214
Putnam county 214
Randolph county, Sparta 214
Randolph county, Chester 215
Richland county 215
Sangamon county 215
Schuyler county 216
Shelby county 216
Stark county 216
Union county 217
Vermilion county, Danville 217
Vermilion county Hoopeston district 217
Wabash county 218
Warren county 218
Wayne county 218
Whiteside county Sterling 219
Whiteside county, Morrison 219
Whiteside county Albany 219
Will county 220
Williamson county 220
Winnebago county 220

Reports of superintendents of departments—
Class A—Cattle 158
Class B Horses 159
Class C—Sheep 161
Class D Swine 162
Class E—Poultry 164
Class F—Mechanic arts sec 1 165
Class F—Mechanic arts, sec 2 166

PAGE.

Class G—Farm products 168
Class H—Horticulture, sec. 1 169
Class H—Horticulture, sec. 2 169
Class I—Fine arts 170
Class L—Natural History 171
Class K—Textile fabrics 171
Class N—Education 171
Amphitheatre and show ring 172
Forage department 172

Secretary's report—
Average report of exhibitions for 1876, 1877 and 1878 441
Capital stock, property, etc 437
Correspondence 434
Cost of improvements, balances remaining 445
Drainage 432
Dairy interests 433
Distribution of seeds 435
Distribution of premiums 440
Exhibitions of 1876 1877 and 1878 compared 436
Fair bulletin 435
Financial exhibit fairs held 1876, 1877 and 1878 437
Gross receipts—fairs, etc 442
Illinois fairs 435
Personal 449
Premiums paid 446
Pure bred stock exhibited, 1878 438
Receipts and expenses 439
Statistics returned by assessessors 433
Suggestions to the board 432

State Dairymen's Association—

Address of Dr Tefft, President 259
Dairying as a part of general farming- paper by Prof Morrow 284
Election of officers 274
Fermentation and putrifaction of milk 281
Fifth annual meeting of the Board 259
Large milkers 286
Officers of the association 258
Paper by W J Burrick- improvement in grasses 261
Paper by John Keating 278
Resolution by Geo P Lord 276
Secretary's report 274
Standard quality and quantity of milk. 286
Supply and demand of dairy products - paper by Capt W H Stewart 266

State Fair and Fat Stock Show—
Financial exhibits for 1878 221
Officers of 221
Departments in exhibition 221
Statement by J B Spaulding 380, 126
Statement of Mr Thornton 176
Statement of Andrew Washburn 179

Swine Breeders' Association, annual meeting -
Berkshire hog, address by Phil. M Springer 305
Election of officers 300
Swine breeding future outlook, address by Prof Geo E Morrow 301
Poland and China hog, address by Dr Ezra Stetson 303
Treasurer's report 301

Thanks to Mr Drake for invitation to dine at the Grand Pacific 64
Thanks to retiring members 182
Thanks, resolution of, to crop and meteorological reporters. 308
Treasurer's report 184

Winter Meeting of the State Board of Agriculture, 1879—
Awards on miscellaneous entries 154
Consideration of reports relating to Fat Stock Show 182
Minutes of the first meeting of committee of arrangements 107
Minutes of the sec nd meeting of committee of arrangements. 113
Minutes of meetings of sub-committee 11

Reports of committees—
Arrangements 107
Auditing 124
Crop statistics 149
Farms, orchard, etc 126
Fat Stock Show premium plate 149
Field crops. 176
Finance 186
Grains, seeds and vegetables. 176
Horticultural display 175
Library 136
Miscellaneous awards 153
Museum 130
Native wines, cider and vinegar 174
Printing 129

PAGE.
Road making 180
Scientists 151
Secretary's report..... 155
Transportation 147
Railroad arrangements for State Fair, 1878..... 148
Reports of superintendents of departments 156
Report of President Gillham 152
Statement of J. B Spaulding..... 126
Statement of Mr. Thornton 176
Statement of Andrew Washburn 179
President's address 186

Wool Growers' Association, Meeting at Freeport, 1877—
American merino sheep register, by F. E Day 294
Election of officers 287
Feed for sheep 294
Hydatid of the brain 291
Liver fluke 291
Merinos for mutton 293
Outlook for the sheep interest 292
Scab mite..... 290
Sheep bot fly..... 288
Sheep insects 287

Wool Growers' Association, annual session at Freeport, 1878—
Essay on breeding sheep and growing wool, by V. P. Richmond..... 297
Official announcement of the death of Ebenezer Ware, Vice President of the Association 926
Resolution appreciating valuable services of Hon A M Garland 296
Report of committee on classification of premiums on sheep at State Fair 297

EIGHTH REPORT

OF THE

STATE ENTOMOLOGIST

(WALSH, 1 LE BARON, 4 THOMAS, 3)

ON THE

NOXIOUS AND BENEFICIAL INSECTS

OF THE

STATE OF ILLINOIS.

THIRD ANNUAL REPORT

BY CYRUS THOMAS, PH. D.
STATE ENTOMOLOGIST

SPRINGFIELD:
WEBER & CO , STATE PRINTERS,
1879.

TABLE OF CONTENTS.

	PAGE
Letter of Transmittal	1
Introduction	5
Classification	9-142
Order Hemiptera, Sub-order Heteroptera	9
Homoptera, 9 Subdivisions of Homoptera	10
Synopsis of the families of Plant-lice	10
Key to Hemiptera	11
Psyllidae—Jumping Plant-lice (Fam.)	12
Genus Diraphia	13
Psylla	15
Aphididæ—Family	19
Nomenclature	19
Characteristics of the Family	26
Life-history and Habits	27
Classification	33
Synoptical table of the Sub-families and Genera	39
Description of Species	44
Sub-family Aphidinæ	46
Sec. Siphonophorini	46
Genus Siphonophora	46
Phorodon	69
Megoura	73
Myzus	74
Drepanosiphum	78
Rhopalosiphum	79
Hyalopterus	82
Sec. Aphidini	83
Genus Siphocoryne	83
Aphis	84
Chaitophorus	103
Myzocallis	105
Callipterus	109
Sec. Lachnini	114
Genus Lachnus	115
Phyllaphis	120
Sipha	120
Sub-family Pemphiginæ	122
Sec. Schizoneurini	125
Genus Schizoneura	125
Glyphina	142
Vacuna	145
Sec. Pemphigini	145
Genus Pemphigus	146
Sub-family Chermesinæ	155
Genus Chermes	155
Phylloxera	157
Sub-family Rhizobinæ	164
Genus Rhizobius	165
Tychea	167
Species of uncertain position	170
Insect Enemies and Parasites	172
Artificial means of destruction	179
Remarks	181
Supplement	186
Psyllidæ—Brief Synopsis of the Genera	211

LIST OF ILLUSTRATIONS.

			PAGE
Fig	1	Heteropterous insect	3
	2	Psylla pyri	19
	3	Wings of Siphonophora—illustrating the nomenclature	[illegible]
	4	Wing of Aphis mali	25
	5	Wings of Schizoneura	25
	6	Wings of Tetraneura	[illegible]
	7	Wings of Chermes	[illegible]
	8	Apterous Plant louse	[illegible]
	9	Wings of Aphis mali	14
	10	Wings of Schizoneura	14
	11	Siphonophora acerifolia	[illegible]
	12	" coreopsidis Winged individual	59
	13	" Wingless individual	60
	14	"	60
	15	Wings of Aphis mali	85
	16	Aphis mali—Wingless individual	85
	17	(Erroneously numbered 14) Aphides	89

No 1 Aphis maidis Winged insect
2 Head and antennæ of Aphis mali
3 Aphis maidis Winged female
4 Corn root infested by Aphis maidis
5 Glyphina ulmicola Wings
6 Pemphigus poulicaulis Wings
7 Head of Pemphigus
8 Wings of Phylloxera

	18	Lachnus dentatus	116
	19	Apple root Plant louse	1[illegible]
	20	Root louse Syrphus fly	1[illegible]1
	21	Glyphina ulmicola (Elm leaf Cocks comb—Gall Aphis	113
	22	Elm leaf Cocks comb gall	14[illegible]
	23	Omitted	
	24	Wings of Tetraneura ulmi	146
	25	Pemphigus vagabundus	146
	26	Poplar leaf Gall louse	148
	27	Gall of Pemphigus vagabundus	152
	28	Gall of Pemphigus rhois	153
	29	Wings of Chermes laricis	155
	30	Adelges of the Spruce	157
	31	Tychea panici (omitted)	
	32	Lady bird larva	173
	33	The Spotted Lady bird	173
	34	The Convergent Lady bird Larva and Pupa	173
	35	The 13 spotted Lady bird	174
	36	The 9 spotted Lady bird	174
	37	The Trim Lady bird	174
	38	The Twice stabbed Lady bird	174
	39	The Twice stabbed Lady bird larva	174
	40	Chrysopa eggs larva cocoon and perfect insect	177
	41	Syrphus fly	178
	42	Larva of Syrphus fly	179
	43	" " feeding on a Plant-louse	178
	44	Schizoneura americana	202
	45	Pemphigus populi monilis	205
	49	Hormaphis spinosus	207
	47	Pemphigus populi transversus	208

LETTER OF TRANSMITTAL.

CARBONDALE, ILL., Dec. 30, 1878.

Hon. D. B. Gillham, President of the State Board of Agriculture:

DEAR SIR:—In presenting to you this, my third "Report as State Entomologist on the Noxious and Beneficial Insects of the State of Illinois," I trust I may be excused for offering some explanations for adopting in this case a somewhat more strictly scientific plan than in my previous report. Not that the language used is any more difficult for unscientific readers to understand, or more technical, for I have endeavored in the preparation of this, as well as of my previous reports, to keep constantly before my mind the fact that my work was chiefly for the benefit of the farmers and horticulturists of Illinois. But at the same time I have felt that there were others of our state interested in this matter, and not a small number either, whose benefit it was also my duty to consider in preparing this report.

The addition, by the school law of our state, of the natural history branches to the studies in our common schools has compelled teachers, many of whom would perhaps otherwise pass these branches by with little notice, to give sufficient attention to them at least to pass examinations in them for first grade certificates. The result has been just what it was expected it would be by those who have given attention to these branches of knowledge, viz: that as soon as they entered upon this new field of knowledge a large portion would become interested therein.

An interest in natural history has been awakened in the minds of teachers and students all over the state to an extent scarcely anticipated by the most sanguine. As insects are most easily procured and most readily preserved, this particular department of the science of zoology has received a very large share of attention. As it is as easy to illustrate the principles of classification, the methods of distinguishing objects and arranging them, by insects as by the larger animals which are more difficult to procure, and the preparation and preservation of which is much more expensive, teachers have found these small animals a ready means of illustrating the principles of the science. Another advantage gained by using them arises from what might at first appear to be an objection—their small size, viz: the necessity for close observations.

This has largely increased the demand for these reports, and other works on this particular science. I have therefore made it a point to

meet this demand as far as possible without sacrificing usefulness in the direction for which the labors of an entomologist were originally intended. Nor has this been done solely for this purpose, but because in this way the number to be reached by these reports would be largely increased.

I may also be permitted to state here another fact of which your board is fully aware, and which you appreciate as fully as I do, that agriculture itself is a science as well as an industry, and I may add the most useful of all sciences and the most important of all industries. There is scarcely an operation in the whole round of agricultural pursuits but what is based upon scientific principles, and very largely upon natural science. Botany, zoology, meteorology, geology, chemistry and the wide scope of natural philosophy, are all called upon to contribute their aid in rendering it more and more successful. Not that crops can be raised, stock improved, and horticulture rendered profitable by scientific theories alone, or by the simple reading of scientific treatises, but by the practical application of true scientific principles. The scientist studies out the laws and principles of nature, the agriculturist makes the practical application, and thus renders them useful, and thus they become co-workers in the effort to benefit mankind, Your board stands as the head and representative of the great agricultural interests of our state, which is pr-eeminently an agricultural state. That you may fulfill to the best advantage the important trust imposed upon you, it is proper, in fact due to your position, that you should have all possible aid given to you. This important fact I regret to say has not always been as fully appreciated as it ought to be by our legislatures. But this has not arisen so much from an unwillingness to legislate in behalf of our agricultural interests as from two other causes—first the fascination which the great problems of political government and control have over the minds of men when they have once entered into the discussion of them; and, second, from the fact the agriculturists themselves have too often failed to present their legislators properly matured plans, by which their great industry might be materially benefitted. I am inclined to think that the latter has probably been as often the cause of neglect as the first.

It is not my province, nor is this the proper place to enter into a discussion of this subject, and I only allude to it here so far as it bears upon the question of bringing to your aid the scientific knowledge which may assist you in fulfilling to the best possible degree for the advancement of the agricultural interests of our state, the duties imposed upon your board.

I am exceedingly gratified at the step your board has taken on this subject; it is a step in the proper direction, and which, if you are properly supported in it, and enabled to carry out, must result in materially benefitting the agricultural interests of our state.

Although my time and studies have been largely devoted to the particular branch of science in which I am at present employed, yet the question, "What can be done to elevate agriculture as a science, and to benefit the great industry of our state?" is one that has long deeply interested me; and one with which I am constantly coming in contact since I entered upon my duties as state entomologist. Every new fact

ascertained in reference to the production of any useful crop, or the culture of a plant, has more or less bearing upon the subject of economic entomology. And the same is true in reference to every new feature in farming or horticulture. Each year, as I close my report, and deliver it for publication, I feel more and more impressed with the necessity of being more practical. I have, therefore, felt it necessary in this case to explain why my report has been devoted chiefly to a limited group of insects, and for the scientific treatment of the subject.

As before intimated, one object has been to spread before the people of our state as rapidly as possible the means of obtaining a general knowledge of the science of entomology, and to this end I have devoted a part of each report to a manual of economic entomology. In the first this part was devoted to the *Coleoptera*, or beetles, found to be injurious in our state; in the second report it was devoted to the *Lepidoptera*, or butterflies and moths, whose caterpillars are found to be more or less injurious. The present report is devoted chiefly to the history, habits and description of the various species of plant-lice found in our country, all of which are injurious to plants. As but little attention has heretofore been paid to these insects by the entomologists of our country, I had to depend very largely upon my own observations, describing for the first time a large number of the species mentioned.

As this family presents some of the most singular characteristics of the entire class, and requires a somewhat peculiar nomenclature, it was necessary that I should devote considerable space to the discussion and explanation of these points. I have also endeavored in this part of my reports to so treat the groups taken up that it would not be necessary to go over them again, but to make them, when taken together, a manual for reference hereafter.

At the close of the report will be found notes of the year, and mention of special insects found injurious during the past season in our state.

Allow me, through you, to thank the board for the honor they have conferred upon me, by selecting me as Entomologist. It was especially gratifying as it indicated that my labors as State Entomologist had at least been satisfactory. I shall be pleased at any time to have the board direct me as to particular investigations they desire made in my department, as I will thus have my attention called more particularly to what is considered most important.

It was recently suggested to me by a member of the board that it might be well to study anew the comparatively few species which Dr. LeBaron aptly designated "first class," as injurious insects. The suggestion I think is a good one, and as it coincides with the plan I have had in view for the past two years, I propose to devote my attention chiefly to it during the next year.

This is a work which cannot be finished in a single season, but requires time and favorable opportunities in order to obtain satisfactory results.

I wish here to tender my thanks to the Governor and various state officers, yourself, Secretary Fisher and the board, for favors received,

and the evident sympathy they have shown at all times with my work. I am also under obligations to the Illinois Central and Chicago & Northwestern railroads for passes when on duty as entomologist, and especially to J. F. Tucker, Esq., manager of the former, who has always been ready to aid me in my work whenever he could do so, by granting facilities for visiting different sections of the state.

I remain yours, very respectfully,

CYRUS THOMAS.

INTRODUCTION.

There is scarcely an individual, old or young, who has paid any attention to plants during the summer, that has not observed upon the leaves or stems, twigs or bark, certain minute, soft-bodied insects, usually without wings and generally huddled together in little groups busily engaged in pumping the sap of the plant on which they are stationed. These insects, on account of their resemblance to certain other insects, and their parasitic habits have, by common consent, received the very appropriate popular name PLANT-LICE. Scarcely a plant in the vegetable or flower garden; a bush, tree or vine in the yard, orchard, nursery, grove or forest; a worthless weed or variety of grass, but what at some time appears to be infested by them. Leaves, flower-stalks, twigs, stems and even the roots are at some time compelled to furnish these insects food. Yet, notwithstanding their very general distribution and constant presence during the summer in almost every garden, yard, orchard and grove, but comparatively little attention appears to have been paid to them in this country. Even our entomologists appear to have generally passed them by with but little notice, and although it is probable our species will ultimately be numbered by the hundreds, yet up to within the last two or three years scarcely a score had been described and named. One reason for this neglect probably arises from the fact of the difficulty of preserving species for subsequent examination, and that but few systematic works on the family had appeared in Europe.

One reason why so little notice has been paid to them in works on economic entomology, is probably because of the supposition of their great similarity in habits, and that a remedy applicable to one species would be equally applicable to all the others. But what has been found to be true in reference to other groups of insects is to a certain extent at least true of these, that the more carefully we study them, and the more we find out in reference to their history and habits, the better qualified are we to counteract and control them, and the more effectual will be the remedies which we will be able to suggest.

In order to illustrate the correctness of these remarks we have only to refer to the investigations in reference to a single species, the Grape Phylloxera, (*Phylloxera vitifolia* Fitch.) which engaged the attention of some of the ablest entomologists both of Europe and America several years before its life history was thoroughly ascertained. My study of our Aphides for a few years, has sufficed to convice me that as yet we are but upon the threshold of their biological history, that what has been ascertained in reference to them is but a small fraction of that which is yet to be learned.

Some of the grandest problems that relate to animal life, belong to the study of these little animated grains, and if ever solved, will, in all probability, be solved by carefully studying their life history.

As they stand, to a great extent, isolated, even in the order of insects to which they belong, it is necessary, in order to understand the characters by which they are classified and described, to adopt a somewhat peculiar system of nomenclature for the group. In order therefore to render this synopsis as complete as possible within the limits to which it is restricted, it is necessary to give at least a brief account of this system and an explanation of the terms used which are peculiarly applicable here, or which are used in a different sense from that in which they are generally applied in entomology.

In an economic point of view, their importance is undoubtedly greater than generally supposed. Their small size causes them to be overlooked to a far greater extent than those who are acquainted with them are willing to believe. I have been astonished since I commenced to study them carefully, to find very many old and experienced agriculturists who are wholly unacquainted with them by their common name, Plant-Lice.

Their quiet and silent method of operating, drawing so gradually upon the vitality of the plant, is another reason why attention is not more frequently drawn to them. It is, therefore, only when they develop in immense numbers on some important cultivated plant, as wheat, hops, etc., that any particular notice is paid to them.

The appearance of the grain plant louse, (*Siphonophora granaria*,) last summer, upon the wheat in the southern part of the state, excited universal alarm—few farmers being able to determine the character of the insect—some supposing it to be the chinch bug and others the Hessian-fly, although aware from an inspection of them that they differed in some respects from either of these species.

These facts, together with the fact of their capability of increase with a rapidity, perhaps unequaled in the entire insect class, render them of sufficient importance to receive the notice here given, in a work on economic entomology. It is proper to state here that the terms *Aphididae* and Plant-lice, in the title of this work, are used in the broad sense, including the leaping plant-lice as well as the true aphides; further on, when the distinction is shown, these terms will be restricted to their proper groups.

On account of their general similarity in appearance and habits, ordinary observers have been content with simply designating them by their common name. They somewhat closely resemble each other in general appearance, as well as in the habit of subsisting upon the juices of the plants on which they reside, it is true; but when we come to examine them closely and compare them carefully one with another, we find there are marked differences in the details of their external anatomy as well as their habits, showing not only that there is a vast number of different species, but also that the species readily admit of being aggregated or arranged into groups by common characters; or, in other words, that there are generic and family differences, as well as specific differences among them.

For example: A number of species possess the power of leaping, most of which have the antennæ terminated by two minute bristles, in both of which respects they differ from all the other species; some are always found more or less covered with a whitish, cottony or downy substance, while others are always naked; some possess little horn-like appendages, called "honey tubes," arising from the upper part of the abdomen near the tip, while others are entirely without these; some have the very singular habit of bringing forth their young alive, while others are always oviparous; some confine their operations exclusively to the leaves, others to the twigs and bark, and others to the roots, while others operate both on the stem and root or leaves and roots; some reside exposed on the surface of the leaves or bark, while others, by some peculiar power, not yet understood, form galls in which they carry on their operations and pass the greater portion of their existence; in most cases the pupae are active as the perfect insects, yet there are some species in which these are stationary, and resemble the apparently lifeless scale of the bark-life.

Most of the species, at some period of the year, present winged individuals of one or both sexes, yet their habits in this respect are widely different, and the differences between the wings of the various species afford some of the best characters yet observed for separating them into generic or larger groups.

For example: In a very large portion, in fact in most of our American species, the wings are very thin and membranous and almost perfectly transparent, while in one very singular group they are opaque and more or less covered with a fine powder, giving them the appearance of minute moths. Very marked differences are found in the veining of the transparent wings of the former; in some the rib vein or chief vein of the fore-wings is central; and as it proceeds towards the apex divides into branches, each of which is again divided; while in another very large group the rib-vein coasts along near the front margin, giving off on the posterior or inner side three bunches which run obliquely outward and backward to the hind margin; some have the third or outer branch twice forked, others once, while in others it is simple or unbranched. Some species place their wings, when in repose, against each other, above the back, in the form of a very steep roof, while others rest them horizontally on the abdomen. Some have the antennae as long or even longer than the body, while in others these organs do not reach the middle of the thorax; these organs, when tipped with two bristles are nine or ten (usually ten) jointed, in all other cases they are seven or less than seven-jointed, in many species they are six-jointed, in quite a number five-jointed and in one generic group but three-jointed.

Some of these differences will doubtless be considered unworthy of notice by those who have never devoted any time to the study of insects and their characters; but when it is found by close and persistent study of the habits of these insects that the difference in the number of forks of one of the branch or discoidal veins is always accompanied by a marked difference in habits, this character, although apparently insignificant, is really important. A knowledge of these facts enables the entomologist, if he can see but a single tiny forewing, to tell at once to what group the species belongs and what are its habits.

Notwithstanding these differences between the groups and species, there are certain points in which all agree, the more important of which are as follows :

1st. In having the mouth formed for sucking, by being prolonged into a slender, horny, jointed tube, which arises far back under the breast, apparently between the front and middle legs.

2d. In not undergoing a complete transformation, as do the beetles, butterflies, etc.; the larvæ and pupæ being similar in form to the perfect insect.

3d. In having but two joints in the tarsi or feet.

4th. In having the antennæ longer than the head, and composed of filiform joints.

5th. In the fact that the winged individuals always have four wings.

6th. In the fact that all live upon the juices of plants.

7th. In their small size, no species of our country exceeding one-fourth of an inch in the length of the body, while many fall considerably short of one-tenth of an inch.

These characters, if particularly observed, will enable the student of entomology, or the agriculturalist who has any knowledge whatever of the science, or of insect habits and characters, to distinguish plant-lice from all other insects.

CLASSIFICATION.

In order to avoid the necessity of reference to other entomological works, and to assist as far as possible those who are not familiar with the divisions of the insect class into orders, families, etc., I will add here the characters of the order, sub-order, etc., to which these insects belong. By reference to my first report the position of this order in the class will be seen.

ORDER HEMOPTERA.

The insects of this order are distinguished from those of other orders by the following characteristics:

1st. By the mouth, which is formed for sucking by being prolonged into a slender, horny, jointed tube, which is usually bent under the breast when not in use

2d. By the fact that they do not undergo a complete transformation or change as do the beetles and butterflies (which are at first grubs or caterpillars, and then quiet chrysalids taking no food), the larvæ and pupæ being similar in form to the perfect insects, the latter not quiescent, but active and taking food as the larvæ and perfect insects.

These characters include a very large number of insects, many of which differ very widely from each other in several important respects. The *Order* has therefore been divided by certain prominent characters in two Sub-Orders (by some treated as Orders), as follows:

Sub-Order HETEROPTERA.—Wings, when present, four; the front pair larger than the posterior pair; lapping over each other at the tips, the basal portion thickened and leathery, while the portion at the tip is thin and membranous. The body is usually flattened above, and the wings, when at rest, always lie flat upon the abdomen. The mouth or beak arises from the front of the lower part of the head. Fig. 1 shows an example of this sub-order; *a* is the beak enlarged; *b*, the insect. This sub-order contains the squash-bug, chinch-bug, bed-bug, tarnished plant-bug, water-measurers, water-boatmen, etc.

a *b*

Fig 1

Sub-Order HOMOPTERA.—Wings, when present, four, (except in the bark-lice, where there are but two); the front pair usually slightly larger than the posterior pair; entirely membranous, sometimes slightly thickened, sometimes thin and transparent, but always similar in character throughout and not differing in character at the base from the tip. When at rest (with few exceptions) the wings rest against each

other, sloping like the sides of a roof; and do not over-lap. The mouth arises from the hinder part of the under surface of the head. This sub-order includes the cicadas or harvest-flies, the seventeen-year locusts, the tree-hoppers, leaf-hoppers, lantern-flies, plant-lice, bark-lice, etc.

It is divided by some entomologists into two sections, while others, as Westwood, divide it into three sections. These two plans are shown in the following brief, synoptical arrangement of the characters of these different sections.

Subdivisions of Homoptera.

Section I.—Tarsi, or feet, three jointed; beak arising from the posterior portion of the under side of the head, but not apparently from the breast; wings present in the perfect insect in both sexes, and always four. This section contains all homopterous insects except plant and bark-lice, therefore further notice of it is omitted.

Section II.—Tarsi less than three jointed; beak arising apparently from the breast, between the front and middle legs; wings usually four when present, sometimes only two, often wanting in the females.

Division 1. Tarsi two jointed; wings, when present, four; antennæ varying in length, but always longer than the head, from three to ten-jointed; never changing in the perfect state into an apparently lifeless scale; a distinct beak present in both sexes.

This division is named *Dimera* by Westwood, from the two-jointed tarsi, and contains the various kinds of plant-lice.

Division 2. Tarsi or feet one-jointed; wings present in the male only, and but two; the female changing, in the perfect state, into an apparently lifeless scale; the beak wanting in the perfect male.

This division is named *Monomera* by Westwood, from the one-jointed tarsi, and contains only the bark-lice or scale-insects.

The first of these "divisions," *Dimera*, which contains the plant-lice, is the only one we have to do with at present. It is divided into three families, *Psyllidæ*, *Aphididæ* and *Aleurodida*, which may be distinguished from each other by the characters given in the following brief synopsis:

Synopsis of the Families of Plant-lice.

A.—The four wings transparent, or at least thin and membranous, and not covered with a mealy or farinose substance; pupæ active and not scale like.

B.—Possessing the power of leaping; the antennæ thread-like, composed of nine or ten (usually ten) joints, and tipped at the end with two minute but distinct bristles. 1. Family—Psyllidæ.

BB.—Not possessing the power of leaping; the antennæ usually six or seven-jointed, though sometimes only three or five-jointed, and always without the two bristles at the tip. 2. Family—Aphididæ.

AA.—The four wings opaque, farinose, or covered with a powdery substance, resembling in general appearance minute moths; pupæ inactive and scale-like. 3. Family—ALEURODIDÆ.

The third family is placed by quite a number of entomologists among the *Coccidæ* or bark-lice, with which they agree in several important respects. It evidently forms an intermediate group between the two divisions, and approaches about as near to one as the other; practically it is of very little importance where it is placed, as there are no species belonging to the family that are sufficiently injurious to require attention.

By the most recent authorities as Buckton (*Monograph of British Aphides*) Packard, (*Guide to the Study of Insects*) etc., this group is placed among the *Coccidæ* or bark-lice. As I will have no occasion in the present brief account of our plant-lice, to allude to any species of it, I will not discuss its position.

The *Psyllidæ* are not usually included in works devoted to plant-lice, but as there are some species known to be injurious to cultivated plants, I have concluded to give a short account of the family and the few species which have been observed in this country.

The following is a copy of a "Key to Hemoptera" which I prepared for the use of my classes in entomology, and although perhaps not the best that could be devised, was nevertheless found quite useful in distinguishing the families of the order.

KEY TO HEMOPTERA.

(*Families according to Westwood*) (*Sub-Orders*)

I. Elytra uniform in texture, coriaceous or membranous. beak arising from the underside of the head. . . .. .HOMOPTERA

II. Elytra coriaceous at base; membranous at the apex; overlapping each other in repose; beak arising from the front of the head .. ..HETEROPTERA.

HOMOPTERA (*Families.*)

a Tarsi three-jointed; antennæ minute, terminated by a slender bristle; wings areolate.

b Antennæ six or seven-jointed; three ocelli placed in a triangle on the back of the head; males musical . .. . *Cicadidae*

bb Antennæ two or three-jointed, males not musical.

c Antennæ only distinctly three-jointed, inserted immediately beneath the eyes; the two ocelli placed beneath the eyes; head often rostrate ... . *Fulgoridae.*

cc Antennæ apparently two-jointed, inserted in front between the eyes; head broad, triangular; the two ocelli placed on the face or forehead (sometimes wanting); pronotum sometimes enlarged; and anomalous in form .. . . .Cercopidae

aa Tarsi two-jointed; antennæ six to ten-jointed, filiform, larger than the head; the four wings transparent; beak apparently arising from the prosternum

d Antennæ ten-jointed, terminated by two short bristles, basal joint thick ..*Psyllidae.*

dd Antennæ three to seven-jointed, apex simple; abdomen with two, more or less, elongated tubercles near the extremity. . . . . *Aphididæ.*

aaa Tarsi one-jointed, terminated by a single claw; males with but two wings and without beak; female apterous, changing to a footless scale on the plant it is attached to.....*Coccidae.*

HETEROPTERA.

a Aquatic (residing in the water), posterior legs generally ciliated and fitted for swimming: antennæ very short, concealed in cavities beneath the eyes; tarsi rarely more than two jointed

b Hind legs elongated, strongly ciliated; head nearly as wide as the body; antennæ four-jointed; anterior legs not raptorial, placed normally... ..... *Notonectidae.*

bb Hind legs not ciliated nor elongated; head small, much narrower than the thorax; anterior legs raptorial, placed well forward toward the head, like large antennæ, having one-jointed tarsi . . ..*Nepidae*

aa Sub-aquatic (residing on the water or in damp places)

c Body flat and broadly oval, nearly circular, eyes pedunculated; anterior femora enlarged; tarsi one or two-jointed; beak short; antennæ short and concealed; residing in damp places . .....*Galgulidae*

cc Body long and narrow; antennæ somewhat long and slender, not concealed; anterior femora not enlarged; tarsi two or three jointed; eyes not pedunculated; residing on the water . . *Hydrometridae*

aaa Terrestrial.

d Beak consisting of three joints, if four the first is very short and annuliform

e Beak naked, not received in a channel; head small, narrowed behind into a neck; body somewhat elongate; terminal joints of the antennæ slender . . . . *Reduviidae*

ee Beak received in a channel; head not narrowed behind into a neck, body generally broadly oval· last joints of the antennæ not less than the preceding . . . . . *Tingidae*

dd Beak consisting of four distinct joints

f Scutellum not reaching back to the middle of the abdomen

g Antennæ four-jointed, inserted in or below an ideal line extending from the eyes to the base of the beak; membrane of the elytra never containing more than five veins.

h Terminal joints of the antennæ very slender, thinner than the preceding; ocelli never present; the coriaceous part of the elytra with a stigma-like triangular piece at the apex; membrane with only one or two strong veins ... . *Capsidae*

hh Terminal joints of the antennæ not thinner than the preceding, but not clubbed; ocelli sometimes present; elytra without the stigma-like piece .. . . *Lygæidae*

gg Antennæ inserted above the ideal line, terminal joint enlarged, sometimes elongate and then scarcely enlarged, beak with the third joint shorter than the fourth; ocelli present. .....*Coreidae*

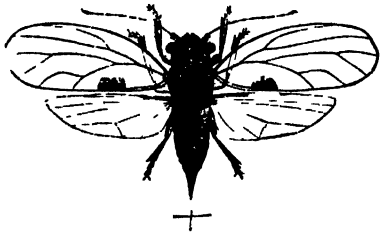
ff Scutellum large, extending to or beyond the middle of the abdomen, sometimes nearly covering it; usually triangular or sub-orbicular; antennæ sometimes five-jointed ... . *Scutelleridae.*

PSYLLIDÆ (Jumping Plant-lice.)

As but few species of this family belonging to our American fauna have as yet been described, although doubtless many are to be found here, I will give the family and generic characters with a little more particularity than I should otherwise do. They are similar in appearance to the ordinary plant-lice, but the head is broader and resembles somewhat closely the head of a little leaf-hopper; it is short and generally triangular in front, and usually deeply cleft in the middle of the front; the eyes are lateral and prominent; and, in addition to these true eyes, they are usually furnished with three ocelli, or little simple eyes, placed on the top of the head in a triangular form, one close to the inside of each eye, and one on the middle of the front where the cleft or notch commences. The antennæ, which are rather long, slender and thread-like, present the most prominent characteristic for distinguishing the family, in the two little bristles with which each is usually furnished at the tip; they are usually ten-jointed, though in some species they have but nine or even eight joints, and if I am not mistaken, in one American species there are eleven; the basal joint is

usually thick, and in one genus the second joint is greatly dilated. The beak is short and three-jointed, arising almost between the fore-legs. The hind margin of the sternum or breast usually terminates on each side with a little spine. The wings, which occur in both sexes, are four in number, and when at rest are placed over the abdomen in the form of a very steep roof; the front pair have a strong mid-rib or mid-vein, running through the middle and dividing near the center into three principal branches, each of which is usually further divided into two branches; the veins of the hind wings are quite slender. (See Fig. 2.) The abdomen of the females is terminated by a conical ovipositor, and in the males is usually furnished with several short, erect appendages; but in neither do we find the corniculi or honey-tubes, so common in the true aphides. The tarsi, as before stated, are two-jointed; and all the species possess the power of leaping, like the leaf-hoppers, hence the generic name, *Psylla*, which was the Greek name for a jumping insect, was given to them by Geoffroy. Their general habits are very similar to the leaf-hoppers, with which, in this respect, they appear to be closely allied.

Fig. 2



PSYLLA PYRI

They subsist, in all their stages, upon plants; and the species are doubtless very numerous, although but few, as before stated, have been described in this country. The larvæ have the body quite flat, the head broad, the abdomen rounded, and the antennæ, at first, apparently one-jointed; the pupæ show the rudimentary wings, in the form of four, comparatively large, broad scales, attached to the sides of the thorax. Many of the species are covered, during the larva state, with a delicate cottony substance, usually arranged in flakes; though some, as our most common species, are naked. A few species, as for example one which inhabits the hackberry, form galls, in which they reside.

The species, so far as I am aware, without any exceptions, deposit eggs, from which the young are hatched, and do not bring forth living young as do most of the true aphides.

The characters, therefore, by which we may distinguish them from the aphides, are as follows:

The two little bristles at the tip of the antennæ, their habit of leaping, the form of the head, and the veining of the wings.

The family has been divided into quite a number of genera, some of which depend on very slender characters, but at present we shall have occasion to refer only to two or three of these.

Genus DIRAPHIA.

There are no common names by which to distinguish this or other generic groups from each other. I am unable to give at present, the full characters of this genus, which, I believe, was established by M. Waga, but as it was originally included in *Livia*, with which it is

closely allied, I may from this fact and from the characters of some of the species, give sufficient for the reader to locate some of the species with reasonable certainty.

In *Livia* the head is square, flat above, deeply cleft in front, extending anteriorly in two conical tubercles; no ocelli, or little eyes; antennæ not much longer than the head and thorax; ten-jointed, the first joint short and thick, the second joint much dilated or enlarged, and three or four times as long as the first; the seven following of equal size, small, the last tipped at the end with two minute bristles, usually of unequal length; wings as heretofore described, except that the front pair are sometimes slightly leathery and but semi-transparent.

Serville and Amyot say that *Diraphia* differs from this only in having the head much larger, and the second joint of the antennæ not being comparatively as long as in that genus. They also appear to doubt the propriety of the formation of the genus. In fact, Dr. Fitch, when he first described the following species, placed them in *Livia*; therefore for all practical purposes, the two may be considered as synonyms:

1. *Diraphia vernalis*, Fitch. The Vernal Diraphia or Jumping Plant-louse.

Found upon the leaves of the pine during the greater part of the year, puncturing them and sucking their juices. They are of an orange-yellow or bright rust-red color, about (.15) one-seventh of an inch in length, with a square-flattened head, concave on its upper side, with a slight, impressed line along the middle of the front. The antennæ short and thread like, about as long as the head; their basal joints largest, and forming one-fourth of their entire length; the forewings thick and leathery, feebly transparent, dull, pale, brownish yellow; the breast coal-black and legs pale.

2. *Diraphia femoralis*, Fitch. The Black-legged Diraphia.

This is probably only a variety of the preceding species, from which it differs only in having all of the thighs of the same deep, black color as the breast. Found on pine leaves in July.

3. *Diraphia calamorum*, Fitch. The Calamus Diraphia.

Found on the sweet-flag (*Acorus calamus*), about one-tenth of an inch long to the tip of the abdomen, and one-seventh to the tips of the closed wings. It is paler than the preceding, being, according to Dr. Fitch, of a dull gray or clay color, with the anterior lobes of the head of a reddish tint, and has no impressed line along the middle of the head. It is black beneath, with the abdomen and legs dull whitish. In other respects agrees with *D. vernalis*.

4. *Diraphia maculipennis*, Fitch. The Spotted-winged Diraphia.

This is a smaller species than the preceding, being only about one-tenth of an inch long to the tips of the wings. It is of a tawny-red color, the thorax being shaded more or less with dusky; the antennæ have a broad black band near the tips. The fore-wings somewhat

shorter and broader than in either of the preceding species; hyaline, with a broad smoky band at the tips, a spot back of the shoulder, and some freckles near the margin, of the same color; the marginal and other veins all white, alternating with numerous black rings. The breast, blackish; legs, dusk or brownish.

Also found on the sweet-flag.

Although apparently of but little importance economically, these species, as well as a number of others, are described, not simply to make the list complete, but as a means of illustrating the genus, so that other species, if found, may be readily located in their proper place. So far but few species belonging to this family have ever been particularly injurious, either in this country or in Europe, but every now and then the cultivation of a new plant, increased cultivation of one hitherto but little used, or some similar cause, produces the sudden increase of a species previously scarcely noticed.

Genus PSYLLA (Jumping Plant-lice.)

In this genus the head is strongly inclined and flat above, and usually, if not always, obtusely triangular in front; the front cleft is not generally as distinct and marked as in *Livia*. The eyes are usually globular and prominent, not flattened as they commonly are in the previous genus; ocelli or little eyes distinct, three in number, placed in a triangle on the upper side of the head, one on each side, near the inner border of the eye, and the other in front. The antennæ are usually as long or longer than the body, slender and thread-like; the first two joints short and thicker than the others; the third the longest, the last short with two short bristles at the tip. Beak very short, arising apparently from the breast, a little behind the first pair of legs; in repose it usually remains nearly perpendicular, composed of three joints, the last very short. The wings thin and transparent, the front pair a little thicker than the hind pair. The hind legs adapted for leaping; the tarsi or feet two-jointed.

The eggs of the species, so far as observed, are oval and somewhat conical in form, pointed at one end and rounded at the other, and furnished, usually, at least, with a kind of beak or appendage near the larger end. They are very commonly deposited in a cottony substance, and are usually yellowish or reddish. It is stated in reference to some species, that the female punctures the bark and places her eggs in the punctures, but this does not appear to be the general rule; at least, the Psylla of Figure 1, deposits its eggs in the little crevices and under the little scales around the leaf-bud, turning the beak underneath out of view, and possibly slightly inserting it into the bark to secure the egg in its place.

The larva are usually somewhat long in proportion to their width, and often covered with a cottony substance, formed by a secretion which exudes from the pores of the body; but our best known and most common species forms an exception to this somewhat general rule. The pupæ are easily distinguished by the two scales on each side, which are rudimentary wings; also by their rounder and more plump form.

Their normal method of passing the winter appears to be in the egg state, but this is by no means the universal rule, as the same species is sometimes found both in the egg and larva state during the winter, resembling in this respect some true Aphidians. There are usually several broods during the summer all produced from eggs deposited by the female after fertilization by the male, agamic generation being apparently unknown in this family. But all the females which deposit eggs do not acquire wings. According to Macquart the eggs deposited in the summer hatch in eight or ten days, soon after which (in the case of the Psylla of the larch) the young larvæ disperse upon the foliage.

The species of this genus are somewhat numerous, and, as in *Aphis*, are usually named after the plant upon which they reside—entomologists taking it for granted that as a rule, a *Psylla* or an *Aphis* will be found on but one species of plant.

5. *Psylla pyri.* The Jumping Plant-louse of the Pear-tree. (Fig. 2.)

This species has the head but moderately cleft in front, and produces two if not more broods during the summer. The young are not covered with a cottony substance, but are naked.

The following history of its operations, derived chiefly from Harris, Kollar and others, will, with the description given below, enable the orchardist to detect it whenever it invades the premises:

It infests pear trees, to which its operations appear to be almost exclusively confined, and is found on these, in some of its forms, from May to October in the northern sections, and from April to November in the southern sections, and is probably two or three-brooded, varying somewhat according to latitude. According to Kollar, the European Pear-tree *Psylla* (which is the same as our species, it being imported) comes forth from its winter retreat, provided with wings, as soon as the buds of the fruit trees begin to expand. After pairing, the female lays her eggs in great numbers, near each other, on the young leaves and blossoms, or on the newly formed shoots.

The eggs are oblong, yellowish, and look somewhat like grains of pollen. The young insects, soon after they are hatched, resemble young, wingless plant-lice (true Aphides,) and are of a dark yellow color. They change their skins and color repeatedly, and acquire wing-scales or rudimentary wings; then fix themselves to the bark in rows, and remain sucking the sap until about to undergo their last change, when they disperse among the leaves, cast off their skins and appear in their winged form.

While Kollar is doubtless generally correct in reference to the history of this species, his statement in reference to the eggs and the method of hibernating must be received with some caution. Leon Defour, in his admirable "Researches upon the Anatomy and Physiology of Hemipterous Insects," speaking of the *Psylla* of the fig (*Psylla ficus*), a closely allied species, remarks that he dissected, at the end of October, a female far advanced in gestation, thereby ascertaining the character of the eggs, which are peculiar. That in November he hunted the leaves and summits of the plants on which these insects

had been abundant, but failed to find any eggs corresponding to those of the female he had dissected. Renewing his search with greater care in the early part of December, when all the leaves were off, he succeeded in finding the object of his search. These were found in the little crevices and under the little scales around the buds, but not on the buds themselves. They were naked, without any cottony covering, disposed without order, sometimes isolated and sometimes aggregated. They were ovoid, furnished on the side near the larger end with a short curved beak. When seen in position the beak is not apparent, as it is on the under side and forms the attachment to the bark; they are also sometimes furnished with a minute filament, and are of a reddish yellow color.

It is very probable that careful examination of the eggs of the pear-tree Psylla will show that they are similar to those of the fig-tree Psylla; also, that they pass the winter in the egg state, and that their eggs are placed on the branches or bud stalks, It is more than probable that this method is somewhat varied for the summer brood.

As before intimated, this is an imported species, brought from Europe on imported pear-trees, and was first observed in this country in 1833.

I have no positive knowledge that it has yet reached Illinois, still I think it more than probable that it has. So far as observed in this country the following appears to be their mode of operating: they insert their short beaks in the bark of the twigs and small branches, and pump up the sap to such a degree that the fluid oozes from their bodies, and mingling on the bark with their castings, forms blackish, rusty patches. The presence of these pests on pear-trees is generally indicated by swarms of flies or ants, which are attracted thither by the sweetish fluid which issues from the Psylla. As a rule, young trees appear to be more liable to their attacks than old ones,

Remedies.—Wash the twigs with a brush which has been dipped in strong soap-suds, or some noxious mixture of this kind. Harris recommends a mixture of strong soap-suds and flour of sulphur. This must be done before the buds expand.

A better remedy will be perhaps, to wait until after the eggs are hatched, then apply ordinary soap-suds, whale-oil soap-suds or lime water, as strong as the plant will bear without injury. Kerosene cautiously applied will be effectual.

Spec char.—The young are usually of a dull orange-yellow color; short, and obtuse behind; and as they advance to the pupa state, acquire little wing-scales.

The perfect or winged individuals, are about one-tenth of an inch long from the front to the tip of the closed wings; the eyes are large and prominent; the head and thorax are of a brownish-orange color, the abdomen greenish; the wings are transparent, ample and marked with very fine dark veins.

6. *Psylla rubi*, W. and R. The Blackberry Flea-louse.

I know nothing further of this than the short notice given of it in the *American Entomologist.* The writer, a resident of New Jersey, describes its operations as follows: "The suckers upon which this insect occurs in the spring commence to twirl around, and, when not interfered with make a complete revolution before they resume their usual

course. The leaves curl up, and become matted around the curl so as to make a safe harbor for the lice-like larvæ, which during the summer, appear on the under surface of the leaves. I presume we can get clear of this insect, after the larvæ are produced, by cutting off the curls and burning them."

Although neither of these species has been positively detected in Illinois, I have some reason to believe that the former or some closely allied species, appeared on fruit-trees in the vicinity of Chicago last year. I tried, but failed, to procure specimens, so was unable to decide with certainty.

The following species of this genus were described by Dr. Fitch, in 1851, in a catalogue of the insects in the New York Cabinet of Natural History. I give his descriptions as I find them as I am unacquainted with them. He appears to have been unacquainted with the habits of the first two:

7. *Psylla tripunctata.* Fitch. The three-dotted Psylla.

Wax yellow, with black back; legs and antennæ, pale yellow, the latter black at the tips; the front wings transparent (hyaline); nerves brown, widely margined with smoky yellow beyond the forks, a blackish dot on the middle of the terminal margin of each of the inner apical cells. Length .16 of an inch. Female.

8. *Psylla quadrilineata.* Fitch. The four-lined Psylla.

Bright fulvous or yellowish: the front wings, hyaline; the nerves, blackish; four whitish longitudinal lines on the middle of the hind thorax (metathorax); abdomen black with a yellow band at its base.

Length, .12 of an inch. Female.

9. *Psylla carpini.* Fitch. The Hornbeam Psylla.

Light green or greenish yellow; fore wings, hyaline; nerves, light green. Length, .16 of an inch. Male and female. Common on the Hornbeam in July.

10. *Psylla annulata.* Fitch. The Annulated Psylla.

Straw yellow; legs, white; fore wings, hyaline, with the nerves straw yellow; antennæ black, except the basal portion, which is straw yellow, annulated with black. Length, .15 of an inch. Male and female. Occurs on the sugar-maple.

11. *Psylla urticaecolens.* The same author mentions another species with the above name occuring on the nettle. I have not seen the description of this species.

12. *Psylla quadrisignata.* This species is also mentioned by Walker but I have not seen the description.

Mr. Walsh alludes to a species found by himself and Baron Ostensacken, forming true galls on the hackberry; and Dr. Harris alludes incidentally to species found on birch and alder, which have the young covered with a cottony substance, as is usually the case in this genus.

APHIDIDÆ. True Plant-lice.

SYNONYMS.—*Aphides*, Linn. *Aphidina*, Burm. *Aphidinæ*, Rondani. *Aphidæ*, Leach. *Aphididæ*, Passerini.

This family embraces all of the true plant-lice, of which cabbage lice, wheat-lice, the woolly aphis of the apple-tree and the phylloxera of the grape-vine, are representatives. It includes some of the most destructive species belonging to the entire order, and presents one of the strangest physiological facts appertaining to the entire insect class.

But I must here warn the reader against the very common error of supposing that the little black flea-like insects often found on young cabbages, turnips and other succulent vegetables are plant-lice, as these belong to an entirely different order. The only insects known as plant-lice, which are in the habit of leaping, are those included in the family *Psyllidæ* which have already been described; the true plant-lice do not leap, but are usually found stationary in groups or colonies, are soft-bodied, and are furnished as heretofore stated, with a slender beak with which they suck the juices of the plants on which they are found.

The family contains a large number of species which has caused entomologists to search carefully for permanent characters by which to divide it into groups or divisions.

Their small size and the difficulty of preserving specimens for examination has rendered this aggregation into groups and genera a slow and difficult process; and even at the present day it may be truly said that no entirely satisfactory arrangement has been reached; that given here is based upon what is found in the most recent works on the Aphidles and my own observations, Buckton, Passerini and Koch being my principal guides.

Before alluding to the classification or arrangement and characters of the sub-divisions of the family, or describing species, it is proper I should explain the various terms used, with which the unscientific reader is presumed to be unacquainted and give briefly the characteristics of the family.

NOMENCLATURE.

As an explanation of the more general terms used in Entomological writings has been given in previous reports of the State Entomologist of Illinois, it is unnecessary for me to repeat it here. I shall therefore confine my explanations to the terms relating chiefly to plant-lice, or which are used in a different sense when applied to them, from what they are when applied to other insects.

Larva.—As these insects do not undergo that remarkable transformation seen in the life of the beetle in its change from a grub (larva) to the apparently lifeless chrysalis (pupa) and then to the perfect insect, and in the butterfly in its change from the caterpillar to the chrysalis (pupa) and then to the perfect insect with its gaudy colors, the term *larva* does not have the marked signification it does when applied to other orders of insects. It may be defined in a general sense, as the young, wingless plant-louse. It is similar in form and

general appearance to the full-grown insect, and it is somewhat difficult to distinguish it from the full grown wingless individuals.

Pupa.—This term is usually applied only to that stage of the winged individuals, during which the embryo wings appear like little scales at the sides As these insects never go into the quiescent or apparently lifeless state of the true chrysalids of the beetles and butterflies, the wingless specimens have no marked or readily distinguished pupa state, and hence this term is seldom applied to them.

Imago.—The perfect insect, or the individual which has passed through all its moultings and has acquired its full growth, whether winged or wingless. In the plant-lice the large majority never acquire wings, but remain feeding during their short period of existence on or near the particular spot where they are born.

On account of their singular method of reproduction, which will hereafter be explained, it has been necessary to introduce additional terms for the various forms of the different sexes. The male, so far as yet known, assumes but one form in species, (except possibly in some species subject to dimorphism or polymorphism, terms which will be explained hereafter); the females, however, present such marked differences in their habits that it is necessary to distinguish them. Some are winged while others are apterous; some produce only living young while others produce only eggs.

The *male* as a general thing, in fact almost universally, is winged; exceptions are to be found undoubtedly in those species which never acquire wings; one or two European Entomologists think they have in a few instances observed wingless males in species where some individuals acquire these organs.

Winged viviparous females. A winged female which produces only living young.

Apterous or wingless viviparous female: A wingless female which produces only living young.

Apterous or wingless oviparous female: A wingless female which produces only eggs.

The term winged oviparous female is not used, as up to this time few instances have been found where the oviparous individuals were winged, and these only in the lower types, where as will be shown hereafter. the method of reproduction is only oviparous

Agamic.—Is a term which is applied to those females or asexual individuals which produce young without the intervention of the male. *Agamic female* is not precisely equivalent to *oviparous female;* although the latter is *agamic*, it applies to reproduction without the intervention of the male whether it be viviparous or oviparous.

External Anatomy.

The external integument or skin which forms the skeleton and acts as the basis for the attachment of muscles, instead of being rigid or leathery as in most other insects, is soft and yielding, rendering the

muscular power feeble, and allowing but comparatively little activity. This condition of the external skeleton renders these insects very susceptible to injury. The body is soft and yielding and usually ovate, or oval in form; and when contracted by the partial losses of their juices, the skin is thrown into more or less marked folds or wrinkles. It is divided into rings or segments, but the number does not appear to be constant; as in some species certain rings are hidden or wanting.

The division into head, thorax and abdomen is manifest, and is very distinctly marked between the two former (head and thorax); but in many wingless species, especially some of the subterranean ones, the thorax and abdomen are only distinguished by noting the number of the segments or those that bear the legs.

The various appendages to these divisions will be noticed as each division is considered

The Head.

The head in plant-lice is sufficiently distinct to be recognized by the most unscientific observer. It is usually nearly quite as broad as the front of the thorax Seen from above it is transverse, the width exceeding the length; the front flat, slightly concave, or with the middle portion slightly advanced in a triangular form. Seen from the front it is triangular, with the base-line above extending from one eye to the other, and the apex below terminating in the beak. Seen from the side it also presents usually a triangular outline approaching a right angle triangle, the top and back forming the base and perpendicular, and the front the hypothenuse, which is sloped strongly under towards the breast. In some genera, especially *Siphonophora*, seen from the side, it reminds one very strongly of the head of a goat. In fact so marked is this that it often assists in determining the generic relation of a specimen which is injured or imperfect. To it appertains the following parts and appendages:

Beak.—Which is sometimes designated by the terms *Rostrum*, *Proboscis*, *&c.*, is the prolonged and jointed mouth which arises from the back part of the underside of the head, and when at rest is usually turned under and pressed up against the breast, but is often seen directed obliquely downwards and backwards apparently from a point between the fore-legs.

It is divided into three joints, of which the basal or first is usually much the longest. It is in fact an extension or prolongation of the under lip; the first joint being deeply channelled above for the purpose of receiving and protecting the slender, hair-like setae or piercers, which are the weapons these insects use to pierce the leaf or bark on which they feed; the second or middle joint is perforated instead of being channelled, thus securing the slender piercers in their position; the third joint, is channelled above, and pointed at the tip. With a magnifier, the slender setae (of which there are three) may often be seen thrust out considerably beyond the point of the beak by the living insect, darting out and in like the tongue of a serpent. These organs, which represent the jaws and mandibles of other insects, are the real instruments with which the plant-lice first pierce the plants, which is not done by the beak as is generally supposed. Its length,

as compared with the body, is used as a character in describing genera and species, in some not extending, when pressed up against the breast, to the base of the middle legs, while in others, as various species of *Lachnus*, and *Schizoneura*, it extends beyond the base of the hind legs sometimes nearly or quite to the tip of the abdomen; in *quercus*, *Stomaphis* (an exotic species) it is nearly twice the length of the insect. The *base* of the beak is the part by which it is joined to the head, the tip or apex the other extremity.

Antennæ.—The jointed bristle-shaped appendages which arise from the upper part of the head, and are sometimes improperly termed horns. Although subject to less variation than what is found in some other orders, yet the differences are sufficient to furnish important generic characters They vary in length from twice the length of the entire body or even more, to but little more than that of the head; and in the number of joints from seven to three, never exceeding the former and never less than the latter in the adult state. The typical form is setaceous or bristle-like, and the widest variation is but a modification of this type. Throughout the family, as a rule which has but few exceptions, the two basal joints are shorter and thicker than those which follow; the third is usually longest, though in *Siphonophora* and one or two other genera, the seventh sometimes equals and even exceeds it; in these genera the latter resembles a slender bristle, usually making a sudden offset at its junction with the sixth, the articulation being always indistinct between these two joints. In *Lachnus* and some allied genera which are often classed as six-jointed, the sixth is furnished with a spur at the tip which is evidently a rudiment of the seventh, but, as in the others, the articulation between the two is not apparent. In the five jointed antennæ of the subterranean species, the fifth (see fig) is but a minute almost imperceptible tubercle.

In the seven-jointed antennæ, the last is often imbricated, sometimes it and other joints are partially surrounded by minute rings; the third joint of the winged specimens is also often marked with little circular pustules or hollow tubercles which are supposed by some entomologists to be in some way connected with the sense of hearing.

In *Siphonophora* and one or two other genera, these organs are situated on short frontal tubercles; while in all the other genera they articulate directly with the head without the intervention of a tubercle.

The larvæ, and often the pupæ, especially of the seven-jointed species, lack one or two antennal joints, a fact that should always be taken into consideration in describing or determining species. The addition takes place not by the growth of new joints at the tip, but by divisions usually of the third, or at least by a division of some one of the joints between the second and sixth, but from my observations I think it is chiefly by divisions of the third.

Front or Vertex.—That part of the head between the antennæ. It is sometimes grooved, sometimes flat and in other species convex.

Eyes.—These are usually very distinct and prominent during the entire life of the insect, in fact they may often be seen in the embryo before it has left the parent; but in some of the subterranean species these important organs are wanting. In many winged speci-

mens a small tubercle may be observed on the back portion of each eye.

Ocelli.—These are minute simple eyes placed on the front of the head; there are usually three of them, but are very difficult to find even with a microscope.

Thorax.

This forms the middle portion of the body, and supports the legs and wings when present, and is composed of three pieces, the front portion or ring is the *Prothorax*, and supports the front pair of legs; the *Mesothorax* or middle portion bears the middle pair of legs and also the front or upper wings when present; the *Metathorax* is the hinder portion to which the abdomen is attached, and bears the hind pair of legs and the hind or under wings when present.

The *Prothorax* or first segment behind the head, is connected with the head by "a loose membrane which shows itself often as a light colored band" (Buckton). It is usually smaller than the following segment, and narrower than the head; but an exception to this rule occurs in the case of the winged *Chermes*, which has this division developed until it is nearly or quite as large as the mesothorax. The upper side or dorsal surface is the *Pronotum*, the under surface the *Prosternum*, though these terms are seldom brought into use in describing species of this family. As before stated this division supports the first or anterior pair of legs, which are attached to the underside; the points of attachment being sometimes designated as the *Fulcra*.

The *Mesothorax* or second segment behind the head, is usually much the largest and most conspicuous portion of the thorax, bearing the second or middle pair of legs, and the upper or fore wings, when present; in some wingless and especially subterranean species there is scarcely any difference in form between the segments which form the thorax and those which form the abdomen, as may be seen by reference to fig. 32—(*Tychea panici*, Thos?). The upper surface—*Mesonotum*, which is sometimes spoken of as the *disk* of the thorax, in the winged specimens usually presents three conspicuous lobes or rounded tubercles; these are sometims black, while the rest of the thorax is green as may be seen in some specimens of *Aphis mali* The underside or *Mesosternum* is deeply excavated to receive the folded beak.

Wings.—These organs are of the highest importance in determining species, as they enable us more easily than any other character to determine the genus or group to which a specimen belongs.

The front or upper pair is usually much larger than the hind pair, and the former are generally connected with the latter by a minute compound hooklet situated on the front or costal margin of the latter. They are usually very delicate and membranous, and mostly transparent, though occasionally dimmed by smoky or fuscous patches.

As a very general rule some individuals of each species at some time during the season acquire wings, but there are a few subterranean species which do not, so far as known, present winged individuals. In most species, the wings, during repose, are placed nearly

perpendicular above the abdomen, with back to back, in the form of a very steep roof, when they are said to be *erect.*

The method of folding these organs is unusual. Instead of simply raising them upward so as to bring them back to back, they are drawn backward from the expanded condition, keeping the anterior margin below, and elevating the posterior, so that when they come together the under sides stand face to face and the posterior margins upwards. In others they are placed flat upon the abdomen, slightly overlapping at the tips; this position is termed *horizontal.*

The venation or number and position of the veins or nerves affords most excellent characters, and in order to abbreviate and render more certain, descriptions, the following nomenclature of the veins and intervening spaces or cells has been agreed upon.

The front margin is the *costa* or *costal vein*, Fig. A. *c;* the strong median vein running from the base (part next the body) outward near the front margin, is the *sub costal* or *sub marginal* vein, sometimes termed the *cubitus* and *mid-rib;* the hind edge, the *posterior margin.* The oblique vein nearest the base, crossing from the sub costal vein to the posterior margin, is the *first oblique* or *first discoidal* vein; the next transverse vein is the *second oblique* or *discoidal vein*; the next is the third *oblique* or *discoidal vein*, but by some it is termed the *cubital* vein; these three veins are sometimes spoken of simply as the first, second and third veins. The third of these veins sometimes forks near the middle, sending off a branch towards the apex of the wings, this is the *first fork* or *first furcal vein* and continues outward to the apex: in many species it likewise forks near the middle, sending off a branch to the posterior margin between the extension of the first fork and third vein, this is the *second fork* or *second furcal vein.*

The sub-costal vein, toward the tip of the wing, expands anteriorly, connecting with the costa, and forms a somewhat elongate and narrow, slightly thickened spot, this is the *stigma*; from the posterior side of this, near its extremity, starts a slenderer vein which makes a curve and extends outward to the apex of the wings, this is the *stigmatic* or *fourth vein.*

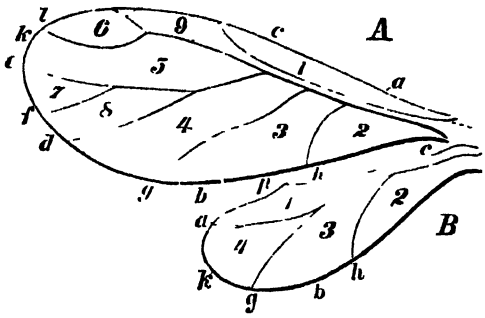
The cells, or spaces between the veins, generally take their names from the neighboring veins, thus: that between the front margin and sub-costal vein is the *costal cell*; that between the first oblique vein and the base, is the *basal* cell; between the first and second, the *first discoidal cell;* between the second and third, the *second discoidal;* between the third vein and second fork, the *first cubital;* between the first and second forks, the *second cubital;* between the first fork and stigmatic vein, the *infra marginal;* that between the fourth vein and margin, the *marginal cell.*

The hind wings have the similar veins and cells named in the same manner.

In the front wings, sometimes the third discoidal vein has but one fork, sometimes it is without any, when it is said to be *simple;* and in a few species even one of the branch or discoidal veins is wanting. The hind wings usually present two branch or discoidal veins, but sometimes there is only one, and sometimes none.

The following figure (No 3) illustrates the nomenclature here used:

Fig 3. (After Buckton.)

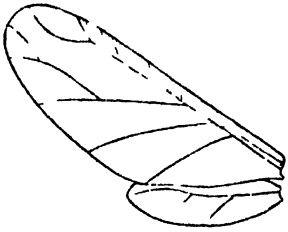


A, upper wing of Siphonophora; *B*, the lower wing of same; *a*, sub-costal vein or cubitus; *b*, posterior margin; *c*, costa or costal vein; *d*, third discoidal or cubital vein; *e*, first fork or first furcal vein, *f*, second fork or second furcal vein; *g*, second discoidal vein; *h*, first discoidal vein; *i*, the base or points of insertion, *k*, apex or apical margin, *l*, sigmatic or fourth vein; *p*, hooklet, 1 costal cell, 2, basal cell; 3, first discoidal cell; 4, second discoidal cell; 5, intra-marginal cell, 6, marginal cell; 7, second cubital cell, 8, first cubital cell, 9, stigma

NOTE —Nos. 5 and 6 are sometimes called apical cells

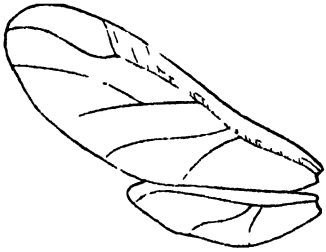
As illustrations of some of these different forms of venation I present here a few figures representing different groups:

Fig 4



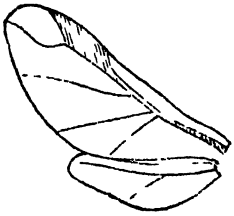
APHIS MALI.

Fig 5.



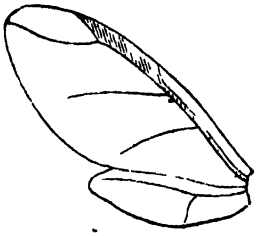
SCHIZONEURA.

Fig. 6



TETRANEURA.

Fig. 7.

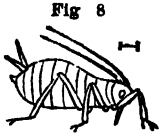


CHERMES.

Abdomen.

The abdomen or hinder division of the body usually shows somewhat distinctly the segments or rings of which it is composed; it is generally much the largest of the three divisions of the body, and usually oval or ovoid in shape and convex. From the posterior portion (sixth segment) in very many species, at each side arises a little cylindrical horn, or more properly speaking, tube, as it is perforated. (See Fig. 8) These have received various names, as *honey tubes*, *cornicles*, *nectaries*, etc. I use the first In some species they are nearly equal in length to one-third the length of the body, in others a little shorter, and so on until they are but mere tubercles, while in a number of species they are entirely wanting. These and other differences in these organs furnish generic and specific characters. They are called honey tubes because it is believed, and perhaps correctly, that honey dew is extruded from them. They are considered *long* when they exceed in length the distance from their base to the tip of the abdomen; *medium* when they about equal this distance; *short* when their length is less than this distance; and *tubercular* when their length is less than their diameter..

Fig 8



They are usually cylindrical or slightly enlarged at the base, but in many species are enlarged or slightly swollen towards the tip.

The *tail* or *cauda* is a small process extending back from the tip of the abdomen, usually rounded or pointed, sometimes sword-shaped. Generally, when the honey tubes are wanting, the tail is also absent. This is not an ovipositor, but simply a process from the upper arch of the last segment.

The *legs* have the usual division, *femur* (plural femora) the thigh; *tibia* (plural tibiæ) the shanks, and *tarsus* (plural tarsi) the foot. The tarsus is composed of but two joints, the outer one terminating in two slender claws.

CHARACTERISTICS OF THE FAMILY.

The species belonging to this family may be distinguished from the *Psyllida* by their antennae, which never contain more than seven joints (the number ranging three to seven), and being without the two bristles at the tip. They are distinguished from the *Aleurodidæ* by their naked, membranous and usually transparent wings.

They are small insects, seldom reaching one-fourth of an inch in length, and sometimes less than one twentieth; their bodies are soft, and the external integument comparatively tender and delicate, thus rendering them very subject to the attacks of predaceous insects and parasites.

The beak is three jointed, varying in length from less than the distance between two pairs of legs, to more than the length of the body. The legs are usually long and slender, the hind pair being sometimes elongated, as though formed for leaping, although none of the species appear to posses this power. The head is not so broad as in the *Psyllidæ*; nor is the thorax as greatly developed in proportion to the size of the abdomen. The ocelli or little eyes are sometimes present, sometimes wanting, but on this point, on account of the difficulty of find-

ing them even when they exist, there is considerable difference in opinion, some contending they are usually absent, while one or two of the latest authorities contend they are generally present.

The honey tubes also form a characteristic of the family, though subject to numerous exceptions where they are wanting.

The character and veining of the wings as heretofore described form tolerably good distinguishing features of most species; some of the different forms and modes of venation being represented in figures 4, 5, 6 and 7. The chief difficulty in using the wing characters arises from the fact that the very large majority of the individuals we see are without these organs, and do not acquire them during life; yet, as will be seen hereafter, there are few, if any, species without winged individuals, of one or both sexes, during some portion of the year, although brood after brood lives and dies with most of its members wingless. The very great similarity of the wingless individuals of the different groups, renders any specific characters derived from their color, markings, etc., often of doubtful value; and this fact has so impressed itself upon the casual and ordinary observers that they usually designate them, no matter where found or what their habits, by the common name Plant-lice, as though all belonged to one species.

Naturalists have therefore sought some more positive method of distinguishing species from each other; this has been found in their habits.

It was the belief of the immortal Linnæus that every plant supported a distinct species of Aphis, or, in other words, that a species of Aphis inhabited but one species of plant; and Curtis, the great English entomologist, tells us that, after careful and extensive examination of this subject, he is inclined to subscribe generally to this opinion, adding that, although a species of Aphis is limited to a certain plant, yet there may be more than one species of plant-louse to one plant.

Although most species have the bodies naked, there are many which are more or less covered when young or during life with a cottony or downy substance, on which account they are often called "Wooly plant-lice." This substance is secreted by certain glandular organs situated in the thorax and abdomen. It is not, as is supposed by many, a waxy secretion, but when held over the lamp scorches brown, giving off an odor like burnt feathers. It is composed of fibers or reduced to particles giving the insect the appearance of being covered with fine meal.

Life History and Habits.

As a general rule plant-lice prefer warm and somewhat moist situations, which are sheltered from the direct rays of the sun and strong drafts of air. Some species feed exposed on the upper surface of leaves, but many more select the underside where they are less exposed to the sun and their numerous enemies. By constantly withdrawing the sap they cause the leaves to curl and blister, and gradually losing their vitality, to die. Others select the young twigs of trees and tender shoots or stems of plants; while others reside upon the trunks and branches, where by constantly drawing the sap from the bark they not only lessen its vitality, but cause it to split, wrinkle or

become roughened, thereby rendering the plant liable to disease and injury by climatic influences. Any one who has watched the operations of the wooly aphis. of the apple tree, is aware how rapidly a little colony causes a minute crevice in the bark to expand.

Some aphides limit their attacks to timber trees exclusively; others feed on soft succulent vegetables and low herbs; while others infest the roots of grasses and other plants, or hide under stones and the rotten mortar of old walls.

Although some plants, especially trees and shrubs, appear to be attacked only by their peculiar aphis, other trees are infested by several species, each appearing to select only a certain part as its point of attack, a few changing during the season from one portion to another; for example, the Grape Phylloxera passes from the leaves to the roots; the Wooly aphis from the bark to the roots; the Corn louse from the tassel to the ear stalk and thence to the root. Some, by a peculiar property not fully understood, are enabled to form galls upon the leaves, in which they pass their entire existence through numerous generations, and until the time arrives for them to seek their winter quarters, or homes for new colonies. As these insects are not furnished with jaws by means of which they can cut their way out of their prisons, by a wise provision of nature these galls always form so that a minute passage remains open as a means of exit. This fact enables the entomologist to decide at once whether a gall is the work of an Aphis or some other insect.

Some families of plants appear to be exempt from the attacks of these insects. For example none have so far been observed to feed upon the *Fumariaceae*, the *Gentianae*, or the *Iridae*. The *Labiatae* are almost wholly exempt, as are the Ferns and other Cryptogamic plants. Acridity and poisonous qualities do not appear to prevent their attacks, as some of the most virulent plants are infested.

How those species which inhabit annuals, pass the remainder of the year after these plants die, is not well understood, and is one of the points which needs further investigation, as it may possibly furnish one method of counteracting such as are injurious to useful annuals

These insects, as others, undergo, in their process of growth, several moultings, that is, cast off their outer or external integument; the number of moults through which they pass is supposed to be four, but in regard to this there is some difference of opinion.

One of the strangest facts connected with the history of the plant-lice is their method of reproduction. But in order to understand this it is necessary to give a brief account of their life history through one season as is generally observed.

These insects, as likewise all other species belonging to the order Homoptera, undergo only a partial metamorphosis or transformation, that is to say, they never are worms or grubs, and never undergo those remarkable changes which transform the grub into a beetle, and the caterpillar into a butterfly. The larvæ and pupæ are similar to the perfect insect in form and habits; and although they frequently cast their skins, and the winged specimens gradually acquire these organs, there is no true dormant pupæ or chrysalis state, as we find in many other insects. Their whole lives are therefore devoted to imbibing food and in producing new broods.

In the autumn, as a general and almost universal rule, the last brood, consists of winged specimens, both males and females. These pair, soon after which the male dies; the female deposits her eggs, after which she also dies. Early in the spring, as soon as the sap begins to flow, these eggs hatch, and the young lice at once insert their tiny beaks into the bark or leaf on which they are situated, and begin to pump up the sap. They wander but little, their entire time being devoted to feeding; hence they grow rapidly, and soon come to maturity.

This spring brood consists, generally without an exception, of females without wings. These females, by some strange provision of nature, are capable of reproducing their kind without the intervention of the males, and, instead of depositing eggs, as the last fall brood, are usually viviparous, bringing forth living larvæ. These are likewise all females, similar to those from which they sprang, and they, in turn, produce a similar brood in the same anomalous manner. This process is repeated again and again during the summer and until in the fall, through some six or seven or even more generations. The last fall brood presents a remarkable change, for it usually consists almost entirely of males and females which acquire wings. These winged females, as previously stated, after pairing, deposit eggs which remain over the winter.

This is the history as generally given and understood, but more careful, recent observations show that in several respects this account is incorrect. In many species winged individuals are often developed during the middle and latter portion of the summer; some species so far as known are never winged, yet present oviparous individuals; some species are only oviparous. But the most serious error in this account as given is that in the species using this double method of reproduction the oviparous female is winged.

Among the *Aphidinae*, on the contrary, the oviparous female is apterous, but in some of the other groups it occurs in both forms, winged and wingless. In the former group the winged female is viviparous.

It was formerly supposed that this fall brood consisted entirely of normal males and females, but careful investigation shows this to be a mistake, as there are usually a number of the agamic females among them, showing a tendency to continue the anomalous method of reproduction, which is apparently checked by the approach of the cold season. It has been found possible, by placing the agamic females of the summer brood in a situation of uniform and sufficiently warm temperature, to cause the viviparous generation to go on indefinitely. I have even observed it going on in the middle of winter, in specimens of the wheat plant-louse (*Siphonophora avenae*), taken from the wheat while snow was on the ground. Instances are on record of this method of generation continuing for four years without interruption.

It is proper to remark that there are some species in which the agamic females do not produce living young, but eggs—the reproduction, in other respects, being similar to that described. It is also a singular fact that there is an intermediate group, in which the young larvæ are brought forth in a very thin and delicate egg-like sack.

How is this mode of reproduction to be explained? is a question that has troubled naturalists from the days of Bonnet, who first discovered it, down to the present time. Leuwenhock and Cestoni were of the opinion that the supposed agamic females were in fact hermaphrodites. Morren, a professor of the University of Liege, after a careful anatomical examination, apparently set this theory at rest. It was his opinion—a view adopted by the celebrated Owen—that all these changes are brought about by some force concentrated in the sperm cells, or, as the latter has in substance expressed it, the spermatic force is transmitted to a mass of germ cells, and these germ cells are the direct excitants of all the changes in the successive generations of cells, until the impregnation of the next ovum. On this theory, the germ stock—for "force," as here used, can mean nothing else—would soon be exhausted, and the reproduction limited. It also requires the transmission of a part of the original germ stock through, sometimes, as many as twenty generations, and with a possible division, according to Owen himself, among more than a million times a hundred million descendants.

Another serious objection to this theory is the evidence furnished by Kyber's experiment, in which he kept up viviparious generation for four years, at the end of which the agamic females appeared to have the same power of reproduction as the first brood. I do not fully and clearly understand Huxley's theory, but the chief idea appears to be that of germination or budding, somewhat similar to that observed in some of the Polype. But his explanation of the production of the ovum in the fall is scarcely satisfactory. Dr. Burnett, according to Packard, also considers this mode of generation a process of budding similar to that seen in vegetables, and that the whole series, from the spring egg until the end of the last fall brood, is but a single generation resulting from the union which produced the egg in the fall, just as the leaves of the tree, which are renewed each year, are said to be contained in the germ of the acorn, or to result from the union of the staminate and pestillate elements that produced the acorn. The theory is the same as Huxley's in substance; but the illustration is wholly inapplicable, as the leaves are but the organs of the individual, as are the legs and antennæ of each individual Aphis.

Parthenogenesis and Agamogenesis are terms which, upon their face, are indicative of our ignorance of their meaning, and are used to express a fact without conveying an idea, if we can suppose such a thing possible. Balbiani has revived the old theory of Leuwenhock and Cestoni, that of internal impregnation or hermaphrodism. He maintains that the embryo viviparous Aphidians are hermaphrodites. He also finds a similar condition in other species considered parthenogenetic, thus striking a heavy blow at this incomprehensible theory.

There are numerous facts in the life-history of some of the lower animals, as strange as it would be for the male principle to be retained under certain circumstances in the female Aphis, and separated under others. This is the simplest explanation that can be found, and it will explain how it is possible to protract indefinitely the agamic reproduction.

But it is not necessary for me to discuss this question further here; for although very interesting to the physiologist and naturalist, it has

but little practical value to the farmer or horticulturalist, the fact of the rapid multiplication of these insects being the chief point in connection with their reproduction with which he is concerned.

As before intimated one part of the life history of these insects, to-wit: the method by which they pass the winter—does not appear to be well understood. That a number of the *Aphidinæ*, especially those which reside on trees, deposit eggs in the fall, and in this form hibernate. is beyond doubt true. But this method is impossible in the case of those which live upon annuals that perish with the close of the season. It follows therefore that their eggs, if this is their method of hibernating, must be deposited somewhere else than on the plants they inhabit. It has been supposed by some that these are placed on the earth. But this is contrary to the usual habits of insects, as the eggs are, as a very general and almost universal rule, deposited where the young can find food as soon as they appear.

If deposited in the earth, this would, in the large majority of cases, place them where they would not be likely to find the kind of food necessary for their sustenance. It follows therefore, I think, as an absolute necessity, that some other method must be adopted. What is this? Although as yet not positively known I think a fact now ascertained may at least give us a clue to this mystery.

It is now known that a number of species in the different groups are subject to dimorphism, that is to a change in form and mode of life to a certain extent For example the Wooly Aphis of the apple tree, (*Schizoneura lanigera*) is found upon the trunks of these trees and also on the roots; the same is also true of the Corn plant louse (*Aphis maidis*); the Grape Phylloxera (*Phylloxera vitifoliae* or *P. vastatrix* Planch), resides a part of the time in galls on the leaves and part of the time on the roots of the vine Although the differences between the root and aerial forms are not equally marked and distinct in all these species, yet the differences in situation and modes of life warrant us in concluding that they undergo certain physiological changes sufficient to adapt them to the changed circumstances. Recent investigations have convinced me that these changes from aerial to root-inhabiting forms is not so rare as hereto supposed; and in fact I am led to believe that it will ultimately be ascertained that many which are now classed as apterous root inhabiting species are but the dimorphic forms of aerial species.

The term "Dimorphism" is used to express the fact that a species is subject to certain influences or changes which cause it to appear in a form different from that which is considered its normal appearance; or in other words that the species presents two forms. Some species, as the Graple Phylloxera are "polymorphic," or present three or more forms. The term "form" here is used to express any differences which might be used as specific in other cases, or as varietal: it is sometimes even used to indicate a wide difference in habits, but then it is on the assumptiom that such differences in habits will be accompanied by anatomical or morphological differences. To explain more clearly to those who have paid little or no attention to entomology, and to render. the explanation applicable to the particular point before us, I call attention to the following fact. In some cases a species which

lives during the summer upon the leaves, stem or trunk of a plant, when winter approaches, moves down to the root, where the individuals of the new generation, assume a somewhat different appearance and different habits from their aerial predecessors, the difference being sometimes so great as to cause them to be placed in entirely different groups.

And it is even possible that some which are found during the summer on annuals pass in autumn to the roots of perennial plants, though this has not yet been positively ascertained.

If we examine the roots of grasses and various other plants in the latter part of autumn or early in the winter, we will find now and then a number of pale creamy-white plant-lice clinging to them. These are very similar in appearance, short thick and convex; with very short antennae, consisting of five or six joints; the eyes minute or apparently wanting; and as a matter of course without wings. Sometimes others a little more active, of an ashy-purple color are found with them. These differ from the others not only in color but are somewhat larger, have longer antennae consisting of six or seven joints; eyes distinct; wingless These subterranean species, on account of various minute differences observed between them, have not only been described as different specifically, but have been grouped into several different genera, the number and relative length of the joints of the antennæ, being one of the chief characters selected for this purpose.

While there are undoubtedly some species which are permanently subterranean, I am pretty well satisfied from my observation and study of these insects that a large portion of these root feeding species are but dimorphic forms of aerial species found upon plants in the growing season of the year. While in this condition, development appears to be retarded, the larva appear to remain in this state probably as long as the rigor of the season is unfavorable to development; and I have even observed that they may be caught in the pupa state, with the wing-pads formed and remain for an unusually long time in this condition, many of them possibly never acquiring full wings.

From observations made on several species I am now pretty well satisfied that a large portion of these pale, cream colored subterranean species, with short five-jointed antennae, are larvae; the bluish specimens with longer and more numerous jointed antennae are in a more advanced stage. I will not attempt to give my reason for this opinion here, as I would have to enter into details interesting only to entomologists.

If I am correct in this opinion, which Buckton, the latest English authority on these insects, appears to have entertained, at least in part, it may ultimately assist us in tracing out a portion of their life history, which is yet involved in mystery.

That many species, like the apple-tree plant-louse, deposit eggs in the fall and pass the winter in this state is well known, and it is quite probable that most of the tree-inhabiting species adopt this method, though some, as the wooly-aphis of the same tree, are known to penetrate to the roots.

CLASSIFICATION.

Although since the days of Reaumer and Bonnet (1737--1779) the Aphides have, by their singular method of reproduction, attracted the attention of entomologists, yet it was but very recently that any attempt worth naming was made to classify and systematically arrange the species of the family

Serville and Amyot in the "*Tableau Methodique*" prefixed to their "*Histoire Naturelle des Insectes Hemipteres*" (1843), arrange the *Homoptera* in two sections corresponding with the two sections defined in he introduction. The second of these sections, which they name *Sternorhynchi*, is subdivided by them as follows:

I. Beak distinct in both sexes; wings when present four
   - A. Wings transparent or but slightly clouded.
     - *a* Saltatorial; antennae divided at the tip into two bristles *Fam* PSYLLIDAE
     - *b.* Antennae as long as the body; head inclined and flat below Gen *Psylla.*
     - *bb* Antennae not much longer than the prothorax; head square, flat and grooved above Gen. *Livia*
     - *aa.* Not saltatorial; antennae not furnished with two bristles at the tip. *Fam* APHIDIDAE
     - *b* Abdomen with honey-tubes. Gen *Aphis*
     - *bb.* Abdomen without honey tubes Gen *Myzoxylus.*
   - A A. Wings opaque and mealy *Fam* ALEURODIDAE.

II. Beak wanting in the male; female apterous; male winged, but having only two wings. *Fam* COCCIDAE

Kaltenbach in 1843, (*Monographie der Familien der Pflanzenläuse*) arranged the family into two principal sections: *first*, those having seven joints in their antennæ and posessing wings; *second*, those with less than seven joints in the antennæ and which he considered as permanently apterous. The first of these sections he subdivided into eight genera taking the veining of the wings as his chief guide; the second he divided into four genera Another arrangement of the same author was based upon the supposed method of reproduction, as follows:

1. *The vivi-oviparous*—Containing the genera *Aphis* and *Lachnus.*
2. *The exclusively oviparous*—Containing the genera. *Chermes*, *Vacuna* and *Phylloxera*
3. *The exclusively viviparous*—Containing the genera *Tetraneura*, *Pemphigus*, *Schizoneura* and probably *Forda* and *Trama.*

But the facts ascertained since the publication of his work show, that the author was mistaken in reference to the method of reproduction of several of the genera named under the second and third

divisions. As I have been unable to procure a copy of this author's valuable work, I am indebted to Mr. Buckton for the above notice.

Westwood, in the "Generic Synopsis" at the end of his "Modern Classification of Insects," arranges the genera of Aphidae as follows:

APHIS. Linn. type—*A. rosae* Linn. Abdomen bicorniculate; antennae long, setaceous; fore wings with three oblique discoidal nerves, the first trifid; proboscis short; collar long.

LACHNUS. Illig. CINARA Curt. type—*A. roboris.* Linn. Abdomen bituberceled; antennae moderate, often filiform; collar short; proboscis long.

ATHEROIDES. Hal. type—*A. serrulatus.* Apterous, linear flattened; spiracles of penultimate joint simple; antennae not longer than half the body; proboscis shorter than the body.

ERIOSOMA. Leach. MYZOXYLE. Blot type—*L. lanigera Ill.* Abdomen without tubercles or horns; antennae short, filiform; body wooly; fore wings with simple oblique discoidal nerves.

ADELGES. Vallot. type—*A. laricis* Vall. Legs and antennae very short, female very much swollen; legs and antennae scarcely visible; setae of the mouth very long.

BRYSOCRYPTA. Hal. type—*Aph. bursaria.* Linn. Composed for the reception of those species of *Eriosoma* which inhabit closed follicles on the leaves and shoots of plants.

PHYLLOXERA. Fonscol. doubtingly introduced by Curtis into his Guide; type—*P. roboris* Fore wings carried flat on the back, with one simple stigmal and two simple oblique discoidal nerves.

THELAXES. Westw. type—*T. quercicola* Westw. Wings carried flat on the back at rest, anterior with three oblique discoidal nerves, the anterior bifid; antennae short.

Koch in his excellent work on the Aphides (*Die Pflanzenlause* 1854) indicates his classification by a tabular statement or list of the various divisions and genera, but without characters. I herewith present this arrangement, adding, where I can, very brief notices of the characters as he has given them elsewhere in his work, and giving equivalents for his names of the primary divisions he adopts.

A. Zweigabler (Dikyphonen.) (third branch vein twice forked.)
a. Aphiden. (No characters given.)
1. Chaitophorus. *Koch.*
2. Hyalopterus. *Koch.*
3. Rhopalosiphum. *Koch.*
4. Aphis. *Linn.*
a. "Conophoren."
b. "Anuren."
c. "Brachyuren."
d. "Prokispilen."
e. "Katoptronen."
f. "Pleurodonten."
g. "Orthuren."
5. Siphonophora. *Koch.*
b Drepanosiphiden.
6. Drepanosiphum. *Koch.*

c. Lachniden.
7. Lachnus. *Ill.*
8. Dryobius. *Koch.*
d. Callipteriden.
9. Callipterus. *Koch.*
e. Phyllaphiden.
10. Cladobius. *Koch.*
11. Phyllaphis. *Koch.*
12. Asiphum. *Koch.*
B. Eingabler. (Monokyphonen.) (Third branch vein with one fork.)
a. Toxopteriden.
13. Toxptera. *Koch.*
b. Vacuniden.
14. Glyphina. *Koch.*
15. Vacuna. *Heyd.*
c. Schizoneuriden.
16. Mindarus *Koch.*
17. Anœcia. *Koch.*
18. Pachypappa. *Koch.*
19. Schizoneura. *Hart.*
C. Dreiastler. (Trichotomen). (Three branch veins, all simple.)
a. Prociphiliden.
20. Stagona. *Koch.*
21. Prociphilus. *Koch.*
b Pemphigiden.
22. Thecabius. *Koch.*
23. Pemphigus. *Hart.*
c. Tetraneuriden.
24. Tetraneura. *Hart.*
d Tramiden.
25. Rhizobius. *Burm.*
26. Endeis. *Heyd.*
27. Forda. *Heyd.*
28. Trama. *Heyd.*
29. Amycla. *Koch.*
30. Tychea. *Koch.*
D. Zweiastler (Dichotomen). But two branch veins, the third wanting
a. Chermiden.
31. Anisophleba. *Koch.*
32. Chermes. *Linn.*
b. Phylloxeriden.
33. Phylloxera. *Fonsc.*

The following synopsis of the sub-families and genera, by Dr. Giovanni Passerini, is perhaps the best that has so far been given to the public. It is translated chiefly from "*Prospetto dei Genera,*" in his "*Gli Afidi.*"

APHIDIDÆ. Passerini—(Sub-families).

A. Antennæ seven-jointed.—(1) APHIDINÆ.
AA. Antennæ six-jointed, at least in the winged form.
a. Winged form obvious, or at least known.
b. Cubital vein once forked or simple.—(3) PEMPHIGINÆ.

bb. Cubital vein twice forked.—(2) LACHNINÆ.
aa. Winged form unknown.—(4) RHIZOBINÆ.
AAA. Antennæ five or only three-jointed.
a. Winged form unknown.—(5) TYCHEINÆ.
aa. Winged form obvious, or at least known.—(6) CHERMESINAE

Sub-family I. APHIDINÆ—Genera.

A. Antennæ on frontal tubercles.
a. Antennæ closely approximate at base front groved. *Siphonophora.*
aa. Antennæ remote at base, front flat or convex.
b. First joint of the antennae with a tooth on the inside. *Phorodon.*
bb. First joint of the antennæ not toothed.
c. Nectaries or honey tubes distinctly clavate. *Rhopalosiphum.*
cc. Nectaries cylindrical, sometimes hardly attenuated at the base, more often incrassated.
d. Cubital vein twice forked.
e. Tail much shorter than the nectaries. *Myzus.*
ee. Tail longer than the nectaries, rarely equal to them in length. *Hyalopterus.*
dd. Cubital vein once forked. *Toxoptera*
AA. Antennæ not on frontal tubercles
a. The seventh joint of the antennæ as long or longer than the sixth.
b. Antennæ smooth.
c. Nectaries longer than thick, or if shorter, or none, then the wingless female has a smooth back
d. Nectaries cylindrical (very rarely none.) *Aphis.*
dd. Nectaries clavate. *Siphocoryne.*
cc. Nectaries shorter than thick, or if a little longer, then the female has a hairy back. *Myzocallis.*
bb. Antennæ pilose.
e. Nectaries cylindrical, or at least twice longer than thick. *Cladobius.*
ee. Nectaries tubercle shaped, much shorter than thick, sometimes almost on a level with the surface. *Chaitophorus.*
aa. The seventh joint of the antennæ as long or longer than the sixth.
f. Species aerial; winged form elegant. *Pterocallis.*
ff. Species subterranean, winged form unknown.
g. The third joint of the antennæ longer than the fourth; hind tarsi one-jointed *Trama.*
gg. Third joint of the antennæ as long as the fourth; hind tarsi two-jointed. *Paracletus.*

Sub-family II. LACHNINAE.

A. Sixth joint of the antennæ setaceous. *Sipha.*
AA. Sixth joint of the antennæ filiform or clavate, often ending in a spur, like a rudimentary joint.

a. Fourth vein of the fore wings nearly straight; stigma linear. *Lachnus.*
aa. Fourth vein of the fore wings curved; the stigma trapezoidal.
b. Abdomen bare.
c. Rostrum short, not extending to the middle legs. *Callipterus*
cc. Rostrum more or less long, extending at least to the hind legs. *Pterochlorus.*
bb. Abdomen wooly. *Phyllaphis.*

Sub-family III. PEMPHIGINÆ.

A. Cubital vein forked at the tip. *Schizoneura.*
AA. Cubital vein simple.
a. Hind wings with two oblique veins. *Pemphigus.*
aa. Hind wings with one oblique vein.
b. Wings deflexed in repose. *Tetraneura.*
bb. Wings horizontal in repose. *Aploneura.*

Sub family IV. RHIZOBIINÆ.

A. Third joint of the antennæ much longer than the fourth. *Forda.*
AA. Third and fourth joints of the antennæ nearly equal in length. *Rhizobius.*

Sub-family V. TYCHEINÆ.

Only one genus in this sub-family. *Tychea.*

Sub-family VI. CHERMESINÆ.

A. Antennæ five-jointed.
a. Fore wings with four oblique veins; the cubital vein forked *Vacuna.*
aa. Fore wings with three oblique simple veins. *Chermes.*
AA. Antennæ three-jointed. *Phylloxera.*

Mr. Walsh, in his article on the Aphides, in Vol. I., Proc. Ent. Soc. Phila., gives the following synoptical table of the United States genera:

Synoptical Table of the United States Genera.

A. Honey-tubes present; antennæ seven-jointed; front wings with three discoidals, the third two branched; hind wings with two discoidals.
a Honey-tubes long; antennæ with joint seven longer than six.
b. Stigmal vein present. *Aphis.*
bb. Stigmal vein absent. *Calaphis.*
aa. Honey-tubes short, sub-obsolete; antennæ with joint seven longer than six.
b. Discoidals of the front wings of equal thickness; wings horizontally folded. *Callipterus.*
bb. Front wings with the first two discoidals more robust; wings steeply roofed. *Lachnus.*

AA. Honey tubes obsolete; antennæ short with not over six distinct joints, seven being obsolete or represented by a very small unquiculus attached to six.

a. Front wings with three discoidals, the third one-branched; antennæ six-jointed, sixth longer than the fifth.

b. Hind wings with two discoidals; wings roofed. *Eriosoma.*

bb. Hind wings with one discoidal; wings horizontal. *Thelaxes.*

aa. Front wings with three simple discoidals; hind wings with two discoidals:

b. Antennæ six-jointed, sixth nearly as long as fourth and fifth together. *Byrsocrypta.*

bb. Antennae six-jointed, four to six subequal, five a little the longest. *Pemphigus.*

aaa. Front wings with two simple discoidals; hind wings with one discoidal; antennæ with four or five joints? *Chermes.*

aaaa. Front wings with one one-branched discoidal; antennæ four or five-jointed? (three). *Phylloxera.*

He further designates these genera by the parts of the plant they operate on and their habits thus:

Aphis, foliage and roots *Calaphis*, foliage. *Callipterus*, foliage. *Lachnus*, twigs. *Eriosoma*, twigs, limbs and roots. *Thelaxes*, galls. *Byrsocrypta*, galls. *Pemphigus*, roots. *Chermes*, foliage. *Phylloxera*, galls.

The following synoptical tables which I have prepared, are intended simply as aids to readers and others desirous of tracing genera and species. I confess that to a certain extent they must be considered artificial, but this I find to be the case with all I have examined. Buckton's arrangement is yet incomplete, and is wanting in reference to that portion of the family where the chief difficulty arises, reaching but partly through the *Aphidinæ* Passerini's, the best complete synopsis we have, I consider defective in the following respects: It is based too exclusively on the number of joints in the antennæ; it distributes the root-feeding apterous species in different sub-families without sufficient grounds. The union of the *Schizoneurinæ* with the *Pemphiginae* is perhaps warranted in part by the similar habits of some of the species, but the marked distinction in the wing characters it seems to me justity the separation of the two groups at least as divisions of a sub-family if not as sub-families, as Buckton and Koch have done. It is evident that the two groups run into each other by such regular gradations that a rigid separation of the one from the other would require the separation of species of the same genus. The method I have adopted for the arrangements of these groups will be shown in the table of the sub-families.

SYNOPTICAL TABLE OF THE SUB-FAMILIES.

(Sub families.)

A. Winged form known; not subterranean except in a few cases where there are dimorphic forms.

a. Front wings with three discoidal veins: antennæ of the winged individuals, and generally of the apterous individuals six or seven-jointed.

b. Front wings with third discoidal vein twice forked (except in *Toxoptera*); posterior wings with two discoidal veins: honey tubes various — APHIDINÆ.

bb. Third discoidal vein with one fork or simple; posterior wings with one or two oblique veins; honey-tubes tuberculiform or wanting. — PEMPHIGINÆ.

aa. Front wings with but two discoidal veins, the third being absent; antennæ never more than five-jointed, sometimes but three-jointed. — CHERMESINÆ.

AA. Permanently apterous, at least no winged form has been observed: chiefly subterranean, residing on the roots of plants. — RHIZOBIINÆ.

SYNOPSIS OF THE SUBDIVISIONS AND GENERA OF APHIDINÆ.

This sub-family may be conveniently divided into three tribes or sub-divisions as follows:

(Tribes.)

A. Antennæ situated on frontal tubercles. — *Siphonophorini.*

AA. Antennæ not on tubercles.

B. Antennæ seven-jointed, the seventh joint always longer than the sixth (except in some species of *Callipterus.*) — *Aphidini.*

BB. Antennæ six-jointed; the sixth joint often furnished with a spur at tip like a rudimentary seventh joint. — *Lachnini.*

Tribe *Siphonophorini*;	(Genera.)
A. Third discoidal vein twice forked.	
a. Honey tubes cylindrical, at least not clavate or enlarged in the middle, straight.	
b. Honey tubes long, their length greater than their diameter, exceeding that of the tail and usually reaching beyond the tip of the abdomen.	
c. Antennæ usually longer than the body; approximate at the base, front apparently grooved; first joint of the antennæ not toothed on the inside; honey tubes long.	*Siphonophora*
cc. Antennæ scarcely longer than the body; remote at base; first joint and tubercles toothed or gibbous on the inner side at the tips.	
d. First joint toothed, and frontal tubercles gibbous internally; honey tubes long.	*Phorodon.*
dd. Similar except that the first joint is not toothed; honey tubes moderately long	*Myzus.*
bb. Honey tubes short, but little more than tubercles, not exceeding the tail in length; antennæ not longer, and sometimes shorter than the body.	*Hyalopterus.*
aa Honey tubes clavate, enlarged in the middle, and usually long.	
b Honey tubes curved and usually, though not always, distinctly enlarged in the middle; antennæ longer than the body; tail inconspicuous or obsolete	*Drepanosiphum.*
bb. Honey tubes straight	
c. Antennæ longer than the body, at least in the winged form; tail large and conspicuous, (in our only species, frontal turbercle and first antennal joint gibbous).	*Megoura.*
cc. Antennæ shorter, or scarcely longer than the body; tail small and inconspicuous	*Rhopalosiphum.*
AA. Third discoidal vein of the front wings with but one fork	*Toxoptera.*

Tribe *Aphidini.*	Genera.
A. Honey tubes clavate; antennæ rather short.	*Siphocoryne.*
AA. Honey tubes cylindrical, tuberculiform or obsolete, but never clavate	
a. Seventh joint of the antennæ longer than the sixth or at least as long.	
b. Antennæ pilose; honey tubes usually very short or obsolete; body also of apterous individuals often hairy or tuberculate.	*Chaitophorus.*
bb. Antennæ smooth, rarely slightly pilose.	
c. Honey tubes longer than thick, cylindrical.	*Aphis.*
cc. Honey tubes tuberculiform or sub obsolete.	*Myzocallis.*

aa. Seventh joint of the antennae shorter than the sixth, or never longer; the veins of the wings often margined with a dark shading; honey tubes very short and sub obsolete. *Callipterus*

Tribe *Lachnini.*

A. Sixth joint of the antennæ setaceous without a spur at the tip. *Sipha.*
AA. Sixth joint of the antennæ filiform or clavate, often ending in a spur, like a rudimentary seventh joint.
a. Abdomen bare; fourth or stigmatic vein of the front wings nearly straight, or slightly recurved; spur or sixth joint apparent. *Lachnus.*
aa. Abdomen wooly; spur of the sixth joint wanting or minute. *Phyllaphis.*

Sub-family PEMPHIGINÆ.

A. Third discoidal vein of the front wing with one fork.
a. Antennæ six-jointed.
b. Hind wings with two oblique veins. *Schizoneura.*
bb. Hind wings with one oblique vein. *Glyphina*
aa. Antennæ five-jointed *Vacuna*
AA. Third discoidal vein of the front wings simple: antennæ six-jointed.
a. Hind wings with two oblique veins. *Pemphigus.*
aa. Hind wings with one oblique vein.
b. Wings deflexed in repose *Tetraneura.*
bb. Wings horizontal in repose. *Aploneura.*

Sub-family CHERMESINÆ.

A. Antennæ five-jointed. *Chermes.*
AA. Antennæ three-jointed. *Phylloxera.*

Sub-family RHIZOBIINÆ.

A. Antennæ seven jointed in the adult.
a. Third joint of the antennæ longer than the fourth; hind tarsi one-jointed. *Trama.*
aa. Third joint of the antennæ not longer than the fourth; hind tarsi two jointed *Paracletus.*
AA. Antennæ six-jointed in the adult
a. Third joint of the antennæ longer than the fourth. *Forda.*
aa. Third joint of the antennæ about the same length as the fourth. *Rhizobius.*
AAA. Antennæ five jointed, sometimes a minute rudiment of a sixth is seen, and sometimes the fifth is but rudimentary. *Tychea.*

Exceptional.—Koch describes a genus *Endeis*, with six-jointed antennæ, the first three joints very short, the fourth as long as these three. His figures show the three short basal joints, the long fourth and a fifth, but no sixth joint.

Remarks.—Passerini introduces into the first sub-family (Aphidinæ) as will be seen by reference to his synopsis already given, the following genera which are omitted, viz: *Cladobius* and *Pterocallis*. So far as I can see there is no good reason why the species of Koch's *Cladobius* might not be placed in *Aphis*.

The species placed in *Pterocallis* may as well be in *Callipterus* where Koch has placed them, and if a part of this group is brought into the tribe *Aphidini* all belonging to that genus should go with them. *Callipterus* evidently forms an osculent group between Aphidini and *Lachnini*, and I am of the opinion that it would be more in accordance with natural grouping to place it in the former than the latter. As *Trama* and *Paracletus* contain only apterous root-feeding species I have removed them to *Rhizobiinæ*

In Lachnini, I have omitted *Pterochlorus* as I consider the long legs of the species for which it was founded insufficient to remove it from *Callipterus* where it belongs. If removed it should be placed in Koch's genus *Dryobius*.

I have adopted Passerini's generic name *Aploneura*, for the *Pemphiginae* with horizontal wings,—*Thelaces* cannot be used here as it is described as having the third discoidal vein once forked.

Buckton, who has so far given to the public only his arrangement of the genera of *Aphidinae*, introduces between *Rhopalosiphum* and *Siphocoryne* a new genus,—*Melanoxanthus*, and next to *Chaitophorus* another genus *Cryptosiphum*.

I have not seen the description of these genera and hence cannot assign them positions in the table Koch gives several genera which I have omitted as unnecessary and as not sufficiently distinct from other genera. *Amphorophora* Buckton is omitted as being without any real distinguishing characters. I am inclined to think if this genus was made to include the species of *Megoura*, making the form and length of the honey-tubes the chief character, it would be more natural and satisfactory than as they now stand

A list of genera, with the names of North American species which may be considered as typical:

Genera.	*Typical species.*
Siphonophora, Koch.	Aphis rosae, Linn.
Phorodon, Pass.	Aphis humuli, Schrk.
Myzus, Pass.	Aphis cerasi, Fabr.
Hyalopterus, Koch.	Aphis pruni, Fabr.
Drepanosiphum, Koch.	
Megoura, Buck.	Megoura solani, Thos.
Rhopalosiphum, Koch.	Aphis persicae, Sulz.
Toxoptera; Koch.	
Siphocoryne, Pass.	
Aphis, Linn.	Aphis mali, Fabr.
Chaitophorus, Koch.	Chaitophorus populicola, Thos.

Genera.	*Typical species.*
Myzocallis, Pass.	Myzocallis hyperici. Thos.
Lachnus, Illig.	Lachnus salicicola, Uhler.
Callipterus, Koch.	Callipterus quercifolii, Thos.
Sipha, Pass.	Sipha rubifolii, Thos.
Phyllaphis, Koch.	Aphis fagi, Linn.
Schizoneura, Hartig	Aphis lanigera, Hausm.
Glyphina, Koch.	Byrsocrypta ulmicola, Fitch.
Vacuna, Heyd.	
Pemphigus, Hartig	Pemphigus populicaulis, Fitch.
Tetraneura, Hartig.	Aphis ulmi, Geoff.
Aploneura, Pass.	
Chermes, Linn.	Chermes pinifoliae, Fitch
Phylloxera, Fonsc.	Phylloxera vitifoliae, Fitch.
Trama, Heyd.	
Paracletus, Pass.	
Forda, Heyd.	
Rhizobius, Burm	Rhizobius lactucae, Fitch
Tychea, Koch.	Tychea panici, Thos.

DESCRIPTION OF SPECIES.

In this part of my report the sub-families, tribes and genera will be arranged systematically according to the plan I have adopted; but no attempt will be made to arrange the species systematically, as I have not had an opportunity of examining sufficient material for this purpose There are a few species introduced on the authority of other authors which I am unable to locate with certainty, not having seen specimens, these will be placed where they appear to belong with notice of the uncertainty in reference to their proper position.

SUB-FAMILY APHIDINAE.

This sub-family includes all the species possessing the following characteristics: The front wings with three discoidal veins, exclusive of the fourth or stigmatic vein at the apex; the third discoidal vein is twice forked (see Fig. 9) in all the species known, except those belonging to the genus *Toxoptera* where it has but a single fork (see Fig. 10); the posterior wings have two oblique or branch veins; antennae

FIG 9

FIG 10.

six or seven-jointed, the latter number being more usual than the former; the third joint longer than the fourth, fifth or sixth, and usually as long or longer than the seventh; the seventh generally setaceous and in many species as long or even longer than the third. Reproduction viviparous and oviparious; the oviparous female always apterous; all the species as far as known producing at some time winged individuals, (at least all those included as I have here arranged this group) The number of species belonging to this division is very large, being the most extensive group in the entire family On this account entomologists have endeavored to split up the old genus *Aphis*, which corresponded with this sub-family, into more limited genera,

This has in some instances been carried too far, the characters selected being so trivial or indefinite ,as to render the generic distinctions of no value for scientific use.

Passerini, in his excellent papers on these insects began the reform movement by dispensing with some of Koch's numerous genera, and I have here attempted to carry it still further by combining some of his generic groups where the characters selected appear to be of little value.

Most of the species are aerial, and as a general rule reside on the leaves, tender twigs or branches of plants or on the stems of succulent plants. As examples of the group the following well known species may be named: the Grain Aphis, Rose Aphis, Hop Aphis, Cabbage Plant-louse, Apple Plant-louse, &c

I think it more than probable that some of the species belonging to this sub-family are dimorphic and reside during the winter on the roots of plants; and it is possible that some which are now counted as apterous, root feeding species, are but other forms of true Aphides.

Buckton, who bases his sub-division into sub-families on the wing venation alone, includes in this group the *Lachnina* of Passerini, but separates the sub-families into two sections corresponding with Passerini's *Aphylinæ* and *Lachninæ*.

I have followed him in combining the two groups into one sub-family, but have divided the sub-family into three sections or tribes: *Siphonophorini*, *Aphidini* and *Lachnini*, as shown in the preceding table. But this arrangement is not strictly followed out in the succeeding pages, which were written previous to this part of the report, and previous to the formation of the last preceding synoptical tables.

The species of *Aphidinae* (exclusive of *Lachnini*)* have the head small; eyes globular and somewhat prominent, and often in the winged individuals they have a distinct tubercle on the back part. The antennae vary considerably in length, being in some cases shorter than the body, but usually equaling or exceeding it in length; composed of seven joints, the first and second short and thick, their length seldom more than their diameter, the others slender and cylindrical; the third much longer than the first and second combined, and usually longer than either of the following; seventh slender and bristle-like, and usually much longer than the sixth. Beak of medium length or short, and standing out nearly perpendicular. Wings large, erect in repose; the front pair with the third discoidal vein twice forked (except in *Toxoptera*); the hind wings with two branch veins. The abdomen usually furnished with honey-tubes The hind legs usually much longer than the others. The body always naked or nearly so, at least it is never covered with the downy or cottony substance found on the wooly lice.

They always operate on the surface of plants, never enclosing themselves in galls; being found chiefly on the leaves, tender twigs, branches or fruit stems, and are extremely common, being diffused on almost every kind of vegetation. They resemble each other so closely that it is very difficult to distinguish one species from another, hence the

*NOTE.—These characters apply more particularly to *Aphidinae*, as given by Pesserini, which includes, as set forth in my synoptical table, *Siphnophorini* and *Aphidini* The characters of *Lachnini* are given hereafter.

older authors were in the habit of describing them by simply stating the plant and part thereof they infested. As a general rule, those that reside on leaves select the under surface, doubtless for the purpose of avoiding the rays of the sun and of escaping the observation of birds and other enemies. It is also probable that they find the underside of the leaf more easily penetrated by their slender setae than the upper surface.

The genera into which this sub-family has been divided have been already mentioned in the preceding synoptical tables.

There are three tolerably well marked sections in this sub-family which it may be of advantage to notice before entering the descriptions of species, as it will lessen the labor of assigning specimens to their proper genera and species. These divisions are briefly characterized in the preceding table.

Section 1. SIPHONOPHORINI.

The species of this section do not present such striking differences in form or habits to those of *Aphidini* as to attract particular attention upon a superficial examination, yet they are easily noticed by one who studies these insects somewhat carefully.

The chief differences between the two are these: the presence of frontal tubercles on which the antennæ are placed, which gives to the head, when seen from the side, a somewhat peculiar appearance bearing a slight resemblance to a goat's head. The antennæ are generally as long and often considerably longer than the body. The size of the body is usually larger than in *Aphidini*, and the legs are also rather longer.

The honey-tubes in the large majority of the species are long, sometimes equalling one-third the length of the body. The tail is also usually quite prominent. As a matter of course there are exceptions to most of these rules, but seldom if ever to more than one or two of them in the same species. The large majority of the species reside on the leaves of plants and mostly on those of a succulent nature, or on shrubs, few being found on trees, and in this case only on the leaves.

The insects of this group evidently form the highest types of the family, and should therefore be placed at the head.

Genus SIPHONOPHORA. Koch.

Beak of moderate length; last joint almost as robust as the penultimate. Antennæ seated on distinct frontal tubercles, very long slender and setaceous, at least as long as the whole body, and often considerably longer, extending in some instances to the tips of the closed wings. The two basal joints are short and thick; the third joint the longest, or at least longer than the fourth, fifth, or sixth, sometimes longer than the fourth and fifth combined; sixth usually shorter than the preceding one; the seventh bristle-like, much longer than the sixth and sometimes as long or slightly longer than the third. The frontal tubercles, on which the antennæ stand approximate each other, giving to the front of the head the appearance

of being grooved. Honey-tubes very long, usually extending beyond the tip of the abdomen, and sometimes equaling in length one-third of the body, cylindrical and nearly always straight, never enlarged in the middle, or clavate. The tail distinct, more than usually long and large, generally curved slightly upward. Legs very long and slender. The wings erect in repose, the front wings with three discoidal veins and a forth or stigmatic vein; the third discoidal vein twice forked; the stigmatic vein curved and rather short. Hind wings with two oblique veins. All the species known present winged individuals. The males are always winged, the oviparous females is never winged: the winged individuals usually seen are viviparous females, the males being rare. The males usually have smaller abdomen, larger wings and longer antennæ than the winged females. The genus contains a large number of species.

Siphonophora Acerifolile. (Thos.)

Aphis, inhabiting the leaves of the soft maple.

I first observed this singular species on the leaves of the soft maple (*Acer dasycarpum*) Fort Dodge, Iowa, during the past summer. Subsequently I received specimens from Peoria collected by Miss Emma Smith, and from St. Louis, collected by Mr. Pergande I am inclined to think it is quite commonly distributed wherever the soft maple is found, but has heretofore been overlooked. Although quite numerous it does not appear to be massed in colonies, but is found scattered over the leaves, somewhat resembling in its habits the Psylla, to which in fac it makes the nearest approach of any species of *Aphidida* with which I am acquainted. Observed in the winged state September 1st and 2d.

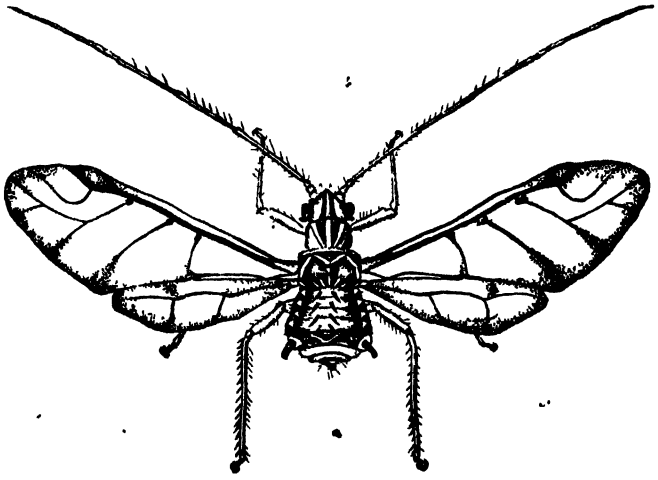


Fig. 11.

It will probably require the formation of a new genus for its reception, as it has some some strongly marked characters not found in other species of *Siphonophora*.

Winged individuals. (See fig. 11.) The general color is light gray varied white and ash brown. Antennæ on very distinct tubercles; very long, extending considerably beyond the end of the abdomen and reaching nearly or quite to the tips of the wings; third joint longest, fully equal in length to half of the body; fourth about two thirds the length of the third, fifth about as long as the fourth, sixth very short not more than one-fifth the length of the fifth, seventh nearly as long as the third, slender Three ocelli, or what appear to be ocelli, very distinct, readily observed with an ordinary pocket lens Prothorax depressed at the sides, forming a slight wing-like expansion each side.

From the back of each of the first three or four abdominal segments arise two distinct, slender, somewhat curved spines, those on the third segment usually the longest.

Honey tubes, rather short, not reaching quite to the end of the abdomen, distinctly enlarged at the base, and tapering to the tips; the enlargement at the base as seen from the side is abrupt. Wings large, the three discoidal veins of the front wings somewhat curved inwards, the second most so; the second rather nearer to the third than to the first, especially in the middle and thence to the margin; the fourth or stigmatic vein very strongly and sharply curved near the base. Most of these veins, especially the fourth and the forks of the third, expand at their extremities, forming dusky spaces which present a very marked character. The sub-costal vein is strictly parallel with the costa. Stigma short and rather small. The hind wings small and delicately transparent, veins minute and pale; the sub-costal bends inward or backward quite distinctly and abruptly at the point where the second discoidal joins it, leaving a triangular space between it and the costa in which there is a distinct, abbreviated, transverse, dark line or elongate dot, pointed directly toward the insertion of the second vein. Basal joints of the antennæ dull-yellowish, with a narrow darker ring at the apex of the third and forth joints; more or less of the fifth of a transparent whitish color, forming an annulus, sixth and seventh dusky. Legs pale General color of the body pale grayish-brown in dead specimens, but the specific markings of living specimens are as follows; Head pale brownish with a narrow white median line, and sometimes a white line around the eyes above. Eyes red. Prothorax same color as the head, with three more or less distinct, very narrow abbreviated, longitudinal, white lines; abdomen marked with a few white dots somewhat regularly arranged, powdered with white behind the honey-tubes. These white lines and spots appear to be formed by a very fine white powdery substance. The spines on the back of the abdomen are black or pale at base and black at the tip. The honey-tubes brown, white at the immediate tips.

Wingless Specimens. (Not fully grown) A very pale transparent, pea green color; eyes dark; apical portion of the antennæ dusky; tibiæ dusky at the base; honey-tubes pale green. The form is oblong, widening slightly posteriorly, tip of the abdomen rounded; no powdery substance apparent on them; on the contrary the surface is smooth and shining. They are located chiefly along the sides of the larger veins on the under side of the leaf.

In the living winged specimens, the dusky expansions of the veins show very prettily, and the stigma appears to be transparent in the central part with a broad dark border encircling it behind.

When in motion, these insects are more active than usual, moving quite rapidly and often taking quite distinct leaps, yet their hind legs are not unusually elongated. Slightly above medium size, but less than *S. rudbeckiæ*.

Although these insects are not numerous on any one leaf—the young sometimes forming small colonies, but adults always scattered—yet the effect of their operations is often very apparent, giving the leaves a shriveled or sickly appearance. It is possible therefore that this species may, under favorable circumstances, develop to such an extent as to seriously injure the Soft Maples so common in the Northern and Middle portions of our state.

Insect enemies.—I find preying upon this species the larva of a Syrphus fly, which I have been unable to trace to the perfect state. It is of a greenish color, the front portion pale, whitish at the immediate front and becoming greener backwards, the hinder portion being quite green, shaded with fuscous. There is a row of tubercles along each side near the stigmatic line, one tubercle on each segment, from which arises a black hair; there are also besides these, three longitudinal rows of black hairs, one median and one on each side between the median line and line of tubercles—one hair in each row to each segment.

This plant-louse appears to be quite distinct from *Aphis aceris* Linn, which according to Dr. Fitch occurs on *Acer Pennsylvanicum*.

Siphonophora rudbeckiæ. Fitch.

I have had an opportunity during the past summer of examining a large number of specimens of this species in all stages. It appears to be very closely allied to if not identical with *A. solidaginis* of Fabricius and other European authors, the color of the thorax of the winged specimens presenting the only perceptible difference.

I find it not only on the Golden rod, and the *Rudbeckia laciniata* but also on the Rag-weed (*Ambrosia trifida*,) and often in immense numbers on the flower stalks and tender stems. It is quite common in Illinois. It is very active and often wanders off to other plants besides those which it usually attacks, but so far I have failed to observe it on any useful plants.

Winged viviparous female.—Size very large, the length of the body varying from .12 to .14 inch; to the tips of the wings .20 inch. Body of a dull orange red or pale reddish brown color thoughout. Antennæ, eyes, honey-tubes and legs (except the base) black. Antennæ long, tapering, the length slightly exceeding that of the body, of a dusky black throughout except the basal joint and tubercle, which are of the same reddish color as the body; when examined with a microscope they are found to have strong hairs on them which appear to be placed alternately on opposite sides somewhat regularly; the seventh joint much longer than the sixth, the sixth not more than half the length of the fifth. Honey tubes long, cylindrical and black, extending be-

yond the tip of the abdomen and equal in length to one-fourth the body. Legs very long and slender; black, except the basal half of the femora which is yellow; the posterior pair is unusually long. The wings are comparatively large, of a transparent greenish-yellow tint; the sub-costal vein or mid-rib runs close to and strictly parallel with the costal vein; the venation very regular, complete and typical, except that the third discoidal vein is sometimes obsolete at its immediate base where it connects with the mid-rib.

I find that there is a variety differing very materially in color, and which would probably be taken for a different species. In this variety the parts which are red in the other, are of a bright green, the markings in other respects being alike. I am satisfied it belongs to the same species as I find the two colors in the same colony in all stages of growth. The wingless specimens of this variety are also of an apple green. The green and red larvæ can occasionally be seen mingled together in the same colony.

The cauda or tail is acute and rather long. The beak reaches nearly to the insertion of the posterior legs; is pale at base, the apical half dusky.

This species has a very common habit of placing itself on the stems of the plant it inhabits with the head downward.

Siphonophora ambrosiæ. Thomas.

About the first of last September, while in Sioux City, Iowa, I found in great abundance on the leaves and tender stems of *Ambrosia psilostachya*, a species which at the time I supposed to be *S. rudbeckiæ*, but subsequent examination of the specimens led me to doubt this conclusion and hence I described it as new.

Similar in size and general appearance to *S rudbeckiæ* but varying in color from a light brown to a dark seal-brown. The discoidal veins of the front wings strongly curved, being much closer together at their base than at the margin of the wing; the third obsolete for a short distance at its base. Antennæ long, passing the tip of the abdomen, light brown, dark at the tip, seventh joint longest, third about two-thirds the length of the seventh, the sixth not more than one-fourth the length of the seventh. Honey-tubes long, cylindrical, reaching beyond the tip of the abdomen. Tail long and pointed. The body of the wingless specimen appears to be covered with tubercles out of which proceed hairs, some specimens appear to have these hairs knobbed at the tip. The winged specimens do not appear to be tubercled, but the antennæ have on them alternate hairs which in the specimens examined appear under a high power to be knobbed or capitate at the tips. A similar characteristic has been noticed by Buckton in *Myzus ribis*, a species found on the Red Currant and the Gooseberry.

Honey-tubes dark or the same color as the body; tail yellowish-brown. Beak dark at the tip reaching to the third coxae.

Siphonophora rosæ. Reaum. The Rose. Aphis.

I had hoped that this season I would be able to procure specimens of this species, but have been disappointed, only a single specimen

having been found, and this wingless and doubtful. Therefore, supposing our species to be identical with that found on the rose in England, I will give briefly the characters and history as found in the writings of English and other European entomologists. The wingless viviparous female is about one-eighth of an inch long, of an elongate ovate form; shining green or reddish; antennæ as long or longer than the body; honey-tubes long, reaching beyond the tip of the abdomen; tail prominent, yellow; eyes red, legs long, yellowish green, with black knees and feet. The winged female has the head and thorax shining black; eyes red; antennæ longer than the body, dark; abdomen green, with about five black dots on each side in advance of the honey-tubes and usually two short transverse black bands behind them; tail yellow, hairy; wings large, sub-costal vein yellowish, other veins dark, stigma greenish; honey-tubes black.

There is also a reddish brown variety, the species being quite variable. They are found on the tender shoots, leaf-stalks and flower-stalks of the rose, especially the last, where they sometimes congregate in large numbers.

There is also another species which infests rose-bushes in Europe, which is quite distinct from that just described. This is the *Siphonophora rosarum*. Koch—and is easily distinguished from the former by its shorter antennæ, shorter honey-tubes and legs, and by the body of the wingless female being studded with tufts of hairs. I am not aware that this species has been seen in this country, though it is quite possible it is found here.

Siphonophora avenæ, Fab. The Grain Aphis.

This species, which has long been known on wheat, oats, barley and rye, has doubtless been imported from Europe, where it has been described under various names, as *A. avenæ*, Fabr; *A granaria*, Kirby; *A. cerealis*, Kalt, and *A. hordei*, Kyber. Occasionally of late years, it has become quite too common upon the wheat crops of our Illinois farmers, sometimes considerably affecting the yield of this cereal. In 1866 it appeared in various parts of the state in sufficient numbers to do considerable damage; and again in the fall of 1876 it made its appearance on the young wheat in Illinois.

They are seen during the season in three different forms, the winged females, the wingless females, which are far more numerous than the winged ones, and the young wingless larvæ. Pupae, with minute rudimentary scale-like wings, may also occasionally be seen. They are furnished with moderately long honey-tubes, and the females have also a distinct ovipositor or tail-like process at the end of the body; the males are destitute of this process.

In England according to Curtis, this species presents the following characteristics:

The wingless female varies in color, being red, green, brown or yellow; the front is convex in the middle, with a distinct lobe on each side; antennæ black, nearly as long, or longer, than the body; knees, tarsi and tips of the tibiae, black.

Winged female brown, rarely green; abdomen with a row of black dots on each side, tip yellow; wings pellucid; veins pale yellow.

Buckton, the latest English authority, describes the viviparous wingless female as subovate, wholly green or brownish green; frontal tubercles moderately large; honey-tubes shining brown, long and thickened at the base; tail large, yellow and recurved; eyes red. The winged female—general color pale brown or rust yellow; thorax brown; abdomen ovate, broad and shining green; honey-tubes black; antennæ longer than the body, frontal tubercles not large; legs ochreous with black knees and feet; tail yellow, ensiform and hairy.

In France, as described by Goureau, the wingless individuals are one-tenth of an inch long, green; eyes, tips of the antennæ, of the femora and of the tibiae, black. Winged specimens one-sixth of an inch to the tips of the wings; head and thorax a testaceous yellow; abdomen, green: wings, transparent, with a brownish band between the border and the sub-costal vein; rest as apterous individuals.

Dr. Fitch describes the winged female as follows: "It is 0.10 long or to the tip of the closed wings 0.20 of an inch. Head transverse, convex in front, rectilinear at base, dull pale yellow. Eyes jutting out from each side of the head, globular, usually of a rusty reddish color Eylets or ocelli three, appearing like minute glassy dots placed at the angles of an imaginary triangle, far apart, one near the upper edge of each eye, and the third one forming a slight projection upon the middle of the forehead. Beak pressed to the breast, arising between the base of the fore legs and reaching half way to the middle legs, pale green, its tip black. Antennæ long and slender, about equaling the body in length, tapering, black, their bases obscure yellowish, seven jointed. Thorax nearly globular; collar much narrower, narrowing forward, a little longer than the head, grass green; remainder of the thorax dull, pale yellow and shining above with a large egg-shaped black or brown spot on each side, between the forward ends of these spots a small oval one, which reaches forward to the collar, these three spots being elevated, convex and polished; sides beneath the wing sockets, with an oval brown spot, paler than those on the back, and placed obliquely. Breast dull black between the four anterior legs and often dusted with a glaucous powder. Scutel dull pale yellow, appearing as an elevated, smooth, transverse ridge of semi-circular form above the base of the abdomen. Abdomen broad oval, rounded at tip, grass green, with a row of about three blackish dots on each side forward of the base of the honey-tubes. Honey-tubes black, as long as to the tip of the abdomen, slightly thicker towards their base. Tail very pale greenish yellow, straight along its upper, and convex on its under side. Legs long and slender, hind pair longest; thighs very pale greenish, towards their middle becoming yellowish, and beyond this black; shanks bearded with fine short hairs, pale dull yellow, their tips black. Feet short and slender, but half as thick as the shanks, obscurely two-jointed and with two small claws at their end. Wings held together in a steep roof over their body, transparent, with slender brown veins, the rib-vein thick and sulphur yellow, as is the stigma spot also, the veins bounding its two sides being brown; inner edge with the customary blackish streak extending forward for a short distance from the tip of the first vein. First and second veins more than twice as far apart at their tips as at their bases. Third vein as

far from the second at its origin as this is from the first, nearly parallel with the second vein, very slightly farther from it at its tip than at its base, its fork given off forward of its middle, and this fork sending off the second one beyond its middle. Tip of the first fork twice as far from the tip of the third vein as from the second fork. Fourth vein strongly curved through two-thirds of its length and then straight and parallel with the second fork, its tip nearer the tip of the second fork than this is to the first fork, and almost twice as far from the tip of the rib-vein as from the second fork."

"In the spring, before the heads are formed on the grain stalk, they live singly scattered over the leaves and stalks, the young lice as soon as they are born wandering away from their parents without any apparent disposition to form colonies. But as soon as the heads begin to appear, these insects, led by mysterious instinct, forsake all other parts of the plant and congregate upon the heads, fixing themselves, head downwards upon the base of the chaff which envelops the kernel. Now the young lice, instead of wandering away, fix themselves in compact colonies around their parents. This change in habit, it is asserted, is accompanied by a change in color, that while feeding on the leaves they are grassy green, but when they change to the heads they gradually acquire an orange color, and ultimately change to the colors mentioned."

But so far as those found on the leaves and stalks are concerned, the description given does not appear to be uniform, for I found upon the wheat in the winter of 1875, living specimens, winged and apterous. The apterous specimens are more or less brownish, thus agreeing with the characters given by Curtis. The winged specimens before me agree with Dr. Fitch's description, except that the head is shining black; the antennæ nearly as long as the body, not pale at the base: the front of the thorax greenish-yellow, back of the thorax black, rest greenish yellow; honey-tubes do not quite reach the tip of the abdomen; wings perfectly pellucid; the rib vein a nearly transparent honey-yellow, rest of the veins colorless. The arrangement of the veins corresponds with that given; the abdomen greenish-yellow, slightly-flecked with fuscous in addition to the lateral spots.

But this is undoubtedly the species now under consideration, as is shown by the form of the head and thorax, the oval elevated spots on the thorax, venation of the wings, and other undoubted characters. This identification, which fortunately I am now able to make, enables me to add something to the history of the species. When the winter wheat appears above the ground in the fall, it passes from its hiding place at this time, wherever that may be, probably in the same way that it does from the winter wheat to the spring wheat and oats in the spring, that is by the winged individuals.

Here they work upon the leaves and stalks singly, while the weather is not too cold, but when winter appears they move down towards the ground, some of them, at least, entering the soil and feeding upon the sap of the roots. At any rate, I find the apterous ones at this time working upon the roots, but at the same time I find a winged individual above ground. I have also observed them heretofore at the root of the wheat, late in the winter, while snow was on the ground; and what somewhat surprised me, I found them busy at work under the snow, and the apterous females bearing well formed larvæ. I am, therefore, led to believe that in this latitude the species passes the

winter in other than the egg state. This will also, probably, be found true wherever winter wheat is grown.

The following account of the operations of this species in England is taken from Buckton's "Monograph of British Aphides"

"Early in the year the young aphides absorb sap from the blade close to the stem, but later they attack the ears in vast numbers, inserting their rostra close to the junctures of the grains with the stalk. Sometimes as many Aphides are present as there are grains in the ears.

"Doubtless the injury done is not so much from the quantity of nutritive sap which they withdraw from the plant as from the incessant irritation produced by the punctures of the sucking apparatus. A sickly condition and a yellow color are soon induced upon the corn plants; but, just as the hop crop is often saved by the appearance of swarms of *Coccinellidæ* and other checks to Aphides, the wheat crop is often saved by the operations of certain minute *Ichneumonidae* and *Chalcididae*.

"If the ears of wheat be searched early in the month of July, very probably a number of dead or dying insects will be found fixed singly at the base of each grain, with their heads usually turned downwards. These insects, which are of a rich brown or sienna color, are the pupæ of *S. granaria* which have been struck by a small, black, winged fly (*Ephedrus plagiator?*). These parasites may be obtained without difficulty if some of the blighted wheat ears are preserved under a bell glass, when they emerge from the round holes they cut in the Aphis pupæ. They possess attenuated shining bodies, long hairy legs, and many jointed antennæ. The insects appear very large when referred to the empty skins within which they have undergone their metamorphosis

"If the cornfields be again searched a little later in the month, another insect of a different genus will be seen running with excitement over the wheat ears, and tapping with its rapidly vibrating antennæ the pupae already struck by the *Ephedrus* before mentioned. One of the ears was placed under a microscope of low power for observation. Notwithstanding this novel situation, the winged insect, which was identified with *Ceraphron Carpenteri*, Curt, was too much interested in its work to suspend its operation. After the *Ceraphron* had satisfied itself that a pupa had not been previously tampered with by one of its own species, it turned the apex of its abdomen towards the abdomen of the Aphis, and then bent the points of its antennæ so as to form a fulcrum, like a knee joint against part of the wheat ear. A fine but short ovipositor was then extruded, and by means of a peculiar sawing motion was finally thrust through the hardened skin of the Aphis pupa. This motion was continued for ten minutes at least, and even after the insect was pierced, during which operation probably the larva of the *Ephedrus* was stung and made insensible. Finally the *Ceraphron* introduced its own egg, from the grub of which eventually come the destruction of the larva of the parasite, which first attacked the larvae of *Siphonophora granaria*."

This species operates not only on wheat, but also on oats, barley and various grasses. During the past spring (1878) these insects were quite abundant in Southern Illinois on the wheat, and caused consider

able alarm among the farmers, but fortunately they were destroyed by heavy rains.

SIPHONOPHORA VITICOLA. Thos. The Grape-inhabiting Aphis.

In the latter part of June, Prof. French sent me some leaves of Clinton grape-vines infested by this species, which he found at Irvington, in the southern part of this state. The next day I was fortunate enough to find the same species on one of my own vines. Not numerous, it is true, but in sufficient numbers with a favorable season to do the vines considerable injury. They were found on the young and tender leaves and stems near the ends of the young branches.

Whether this is the *A vitis* of Scopoli or not I am unable to say, as I have not seen the description of that species.

Wingless-females.—Strongly ovate in shape, broad behind, and about .08 of an inch long. Of a dusky-brown color, somewhat paler in front. Antennæ of the usual form in this genus, but scarcely as long as the body. Honey-tubes very long, slightly curved and slightly enlarged at the base, cylindrical and fully one-fourth of the length of the body. Legs rather long but not to the same degree as in *S. rudbeckiæ*.

Honey-tubes, legs and antennæ black except that there appears usually to be a broad, pale annulus on the antennæ near the base, and in many specimens there are also several pale rings. The tibiae of the front legs have the upper half pale. Tail distinct.

Winged-female.—Very similar in appearance to the wingless, somewhat slenderer; front parts darker, the head and central parts of the thorax dark brown. The second discoidal vein more than usually distant from the third; stigma dusky or brown, elongate, sides parallel, pointed at the tip. Length of body same as wingless.

The following notes in reference to this species were kindly furnished me by Prof. French.

"About the 25th of June they first began to appear on the ends of the twigs of the Clinton grape-vines, working at first only a few inches down from the end. They spread rather rapidly over the twigs, so that in the course of two or three days they were on a dozen or more. By this time the larvæ of a Syrphus and a Chrysopa had found them and were at work upon them. By July 10th the lice had spread over the vines along one side of a walk, which is bordered on both sides by a mixture of Clintons and Concords, yet working on the Clintons only. They appeared to work mostly on those twigs in the shade of some neighboring peach trees. July 14th a further examination showed that more twigs were infested than before, some twigs were covered as far down as twelve or fifteen inches from the tips."

During the past season (1878) I had an opportunity of observing this species somewhat carefully, I found almost every colony ruthlessly attacked by a species of *Aphidius*, which in a short time destroyed all on my vines.

SIPHONOPHORA SETARIÆ. Thomas. The Bottle-Grass Aphis.

This species was found in August on the heads of a species of bristly Fox-tail grass, usually known as Bottle Grass (*Setaria glauca.*) These plant-lice appear to confine themselves to the heads, feeding on the rachis and on the little fruit pedicels. Occasionally they wander to the stems and even to the leaves What appears to be the same species, was found about the same date on the heads of the Cockscomb grass (*Panicum crus-corvi*).

Pupa.—Somewhat oval in form, width about two-thirds the length. Length about .05 of an inch. Antennæ nearly as long as the body, seventh joint about equal in length to the third and fourth; without hairs. Honey-tubes slightly enlarged at the base, cylindrical, reaching nearly to the tip of the abdomen; tail distinct, conical, about as long as the width of the preceding segment, rather broad. Wing-pads distinct.

General color brown or brownish with a slight olive tint; first and second joint of the antennæ dusky, third and fourth bright yellow, apex dusky; eyes black; wing-pads greenish at the base.

Wingless female.—Honey-tubes extending slightly beyond the tip of the abdomen, black; tail white; legs yellow, except the joints and tarsi which are dusky, the femora are generally white at the base, growing darker toward the apex. Antennæ nearly or quite as long as the body, marked as in the pupa except that the light portions are clear white. Beak reaching nearly to the hind coxae, pale and apparently slightly enlarged at the tip.

Winged females.—Antennæ similar to that of the wingless specimens, except that they are a little longer, the third, fourth and fifth joints being slightly elongated but bearing the same proportion to each other as in the pupa; third joint, under a strong magnifier, shows very distinct glassy or cicatrized spots. The mid-rib or subcostal vein of the forewings is stout and runs parallel with the costal vein; the three discoidal veins about equally distant from each other at the base; the first slightly curved inward toward the base of the wing as it approaches the hind margin; stigmatic vein regularlycurved; stigma fusiform, prominent and opaque, of a brown color. Wings transparent. General color similar to that of the pupa.

The wingless specimens found on cockscomb grass differ only, in being of a lighter color—pale uniform plum color; and in having a distinct tubercle on each side of the neck; tail rather more elongate and narrow. The other markings, which are strongly characteristic, are the same, and hence I think this is not a different species.

SIPHONOPHORA EUPHORBIÆ. Thos. The Spotted-Spurge Aphis.

This and the next species were obtained at Sioux City, Iowa, when I was there about the first of September. By some means I have lost the note I made in reference to its color and hence can only give the following imperfect description from the alcoholic specimens. I remember feeling quite confident at the time the two were discovered that they were

very distinct species, although this was similar in color to the other, both being pale green.

Found on *Euphorbia maculata.* Antennæ longer than the body, very slender; the third and seventh joints very long; a few regularly placed hairs. Honey-tubes long and slender, reaching beyond the tip of the abdomen, nearly one third as long as the body, cylindrical Tail very distinct, ensiform and slender, about half the length of the honey-tubes Wings with the sub-costal vein somewhat robust, diverging as it leaves the base so as to leave the widest space between it and the costal vein opposite the insertion of the first discoidal vein, then approaching until it reaches it at the stigma; stigma elongate fusiform with the outer end long and pointed; third vein obsolete at the immediate base.

The specific name *euporbiae* has been previously used in *Aphis*, but as this comes in *Siphonophora*, where the name has not been heretofore used, it will cause no confusion.

SIPHONOPHORA EUPHORBICOLA. Thos. The Margined—Spurge Aphis.

Found September 1st, 1877, at Sioux city, Ia, on *Euphorbia marginata*

Winged female.—Antennæ long and slender, exceeding the body in length; legs very long and slender; general color a pale pea-green; honey-tubes very long, reaching beyond the tip of the abdomen, equal in length to about one fourth of the body; wings very large and transparent. Head pale glaucus, the two lateral ocelli very prominent, eyes dark; antennae dusky except the basal joints and the base of the third joint which are pale. Thorax with a slight purplish tint, prothorax green, abdomen pale green, legs hyaline except the knees and tarsi Honey-tubes pale green at base, dusky at the tip; tail long, sword shaped, slender, curving upwards, about half the length of the honey-tubes, greenish Wings with slender but very distinct veins, which are dark or brownish except the costal and sub costal which have the basal portion pale; veins very straight except the stigmatic which is strongly curved; stigma elongate, narrow and pointed at the ends, with the sides parallel. Beak extending to the hind coxae

Antennæ similar to those of *S rudbeckiae* with a few regularly placed alternate hairs.

Length to tip of the body .09 of an inch; to tip of the wings .1 inch.

Wingless females.—Pale green throughout except the eyes which are black; the antennæ dusky except at the base; tips of the honey-tubes and the tarsi dusky; legs pale, transparent

I noticed a number of specimens which were covered over, especially on the abdomen, with rounded tubercles, and with minute short hairs or cottony scales. These I took to be sexual differences.

This species is very closely allied to *S. cyparissiae* Koch., but is distinct, as that has red eyes.

It was quite abundant on the leaves and tender stems of *Euphorbia marginata.*

SIPHONOPHORA ASCLEPIADIS? Fitch. Milkweed Aphis.

Found at Fort Dodge, Iowa, September 1st, on the leaves of the large Milkweed (*Asclepias cornuti*,) generally on the under side, or on the upper side, near the base of the leaf. They are generally found near the top of the plant on the young and tender leaves.

I give this as identical with the species described by Dr. Fitch with some doubt, if it should be different it may be named *S. asclediadifolii*. I herewith present Dr Fitch's description.

"It inhabits the under surface of the leaves of the common Silkweed. Black; abdomen pale green; two rows of compressed dusky dots on each side, three in the lower and five in the upper row; honey-tubes nearly reaching to the tip of the abdomen; veins of the fore wings brown, the costal or marginal one whitish; stigma smoky-white. Length, 0.15 inch."

Wingless females.—About medium size; antennæ nearly as long as the body; honey-tubes reaching beyond the tip of the abdomen, largest at the base, cylindrical The general color very dark green, many so dark as to appear black, but usually the green shows distinctly on the abdomen, the true color appearing to be green or dark green with dusky shadings; under side dark green; antennæ transparent whitish, except near the tip where they are dusky; legs clear, transparent white, except the tarsi, which are black; honey-tubes black; tail distinct, but short slender and apparently dark green. Body ovate and convex.

The young larvæ are pale greenish. Those which will acquire wings are easily distinguished from other larvæ while quite young, being more flattened on the back, more elongate and oval in shape and the honey-tubes are not more than half the length of those of the apterous viviparous females. These and the pupæ they produce are yellowish or orange colored, sometimes greenish.

Winged individuals.—Found with the above and as I am fully satisfied belonging to the same species.

Antennæ a little shorter than the body, reaching about to the base of the honey-tubes; the tubercles on which they stand have the inner margin more than usually prominent; the third joint shows a few pustulous spots Front between the antennæ appears to be prominent and almost pointed; the tubercle on the hind portion of the eye very prominent Honey-tubes cylindrical, reaching beyond the tip of the abdomen, length about one-fifth that of the body; tail distinct but not very prominent, somewhat narrow and conical, not more than one-fourth as long as the honey tubes. General color yellow or greenish yellow. Antennae dusky, third joint pale at the base; head dark; neck yellow; thorax dark above and beneath; abdomen yellow; honey-tubes dusky in the middle, paler toward the base and tips; tail yellow; the tips of the tibiae and tarsi dark.

SIPHONOPHORA ERIGERONENSIS. Thos. Aphis of the Canada Flea-bane.

Found during August at Carbondale, Illinois, on the flower stalks of the Canada Flea-bane (*Erigeron Canadense*). Observed first August 16th, some were then in the winged state; again noticed August 28th.

Winged female.—Green; the antennæ, eyes and honey-tubes black. Antennæ as long or rather longer than the body, the seventh joint scarcely as long as the third, but this relative length does not appear to be uniform; third joint slightly pustulate, with a few hairs regularly placed; very similar to the antennæ of *S. rudbeckiae;* first and second joints pale greenish yellow, rest dusky.

The eyes black with the usual posterior tubercle. Beak moderately long, pale except at the extreme tip which is black. Honey-tubes very long, cylindrical and stout, slightly thickest at the base; extending beyond the tip of the abdomen, and nearly equal one-third the length of the body; deep black throughout. Tail distinct, rather slender, narrow at the base, slightly enlarged in the middle, curved upward and pointed at the apex. Legs long and slender, black except the basal half of the thighs which is transparent green. The head and thorax are a deeper green than the abdomen, which has a yellowish tint.

The young are pale greenish yellow; the full grown wingless females a light pea-green, with sometimes a deeper-green area in the middle part of the abdomen above The tail, in the apterous individuals, is slender and ensiform; and about one third the length of the honey-tubes

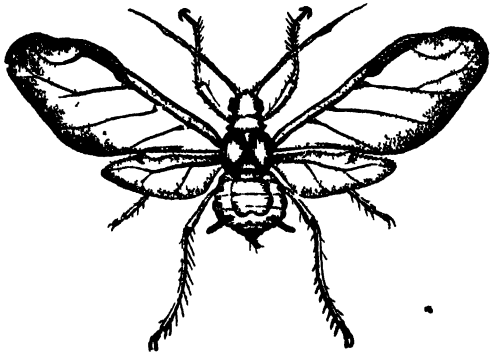
Length of winged individual .08 inch, to tip of the abdomen; .13 inch, to tips of the wings.

SIPHONOPHORA COREOPSIDIS. Thos. Aphis of the Spanish Needle

Found by Mr. Th Pergande at St. Louis, Mo, in October, on the heads and flower stalks of Spanish needles (*Coreopsis aristosa*). I am not absolutely positive as to the species of plant, as only a little fragment was sent of the head, but am satisfied that it was a species of *Coreopsis*. I ascertained nothing further in reference to the habits of the species.

Winged individuals—(Fig. 12.) Antennæ about two-thirds the length of the body, joints proportioned as usual. Honey-tubes long and cylindrical, length equal to about twice the distance to the tip of the abdomen Body elongate, oval, not tapering. Subcostal vein of the front wings robust, parallel with the costal, the other veins slender and delicate. Head and thorax black; abdomen greenish yellow with a grass green spot on the back next the thorax, and three green spots along each side, one on a segment; antennæ, legs, and honey-tubes black; tail the color of the abdomen. Wings present a slightly smoky appearance; costal vein, stigma and discoidal veins very dark—almost black; subcostal with a yellowish tint.

Fig. 12



Wingless individuals—(Figs. 13 and 14.) Head pale yellow; thorax yellowish green; abdomen greenish yellow with a grass-green streak running from the thorax to the tip of the abdomen; also one running across near the thorax; the hind margin of the abdomen from the base

Fig. 13

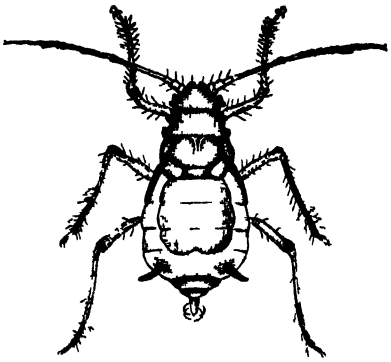
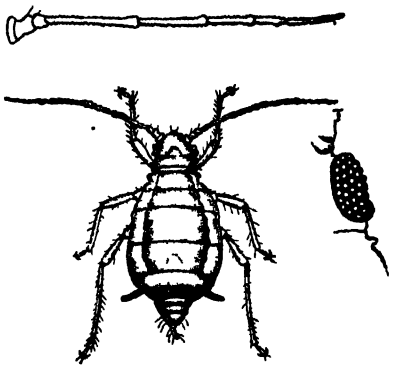


Fig 14.



of one honey tube to the other, is of a reddish tint Eyes black; wing cases of the pupa black Fig 14 shows to the right a highly-magnified view of the right eye; at the top is an enlarged figure of an antenna

SIPHONOPHORA LACTUCÆ. Linn?

There is much confusion in reference to the species of plant-lice inhabiting the common garden Lettuce; and it is at present, perhaps, impossible to identify the species named by Linnæus. Kaltenbach, Koch, Walker, Passerini and Buckton differ so greatly that not more than two out of the five authors agree on any one species. As the only specimens I have discovered were wingless, I am unable to determine amid this confusion, to which it belongs, and will therefore give briefly the descriptions by these authors so far as I have them at hand.

Koch's figure and description shows his species as follows: Size slightly above medium.

Winged-female.—The head, antennæ, a large dorsal spot on the latter part of the abdomen, and the honey-tubes black; eyes, thorax and front and sides of the abdomen a bright reddish brown; legs yellow, with the tarsi and tips of the femora and tibiæ dark; tail pale yellow. Antennæ extending slightly beyond the tip of the abdomen; honey-tubes rather long; tail short and slender.

Wingless-female.—Somewhat larger. Antennæ and eyes black; head, thorax and abdomen bright reddish-brown; on the disk of the abdomen there is a large black spot with the central and larger portion of it pruinose or gray, and its lateral margins fringed by black; honey-tubes very long, slender and black; tail rather long and yellow; legs as in the winged female; the abdomen is slightly hairy, especially at the sides.

Kaltenbach states that this is his *Siphonophora sonchi* which he makes identical with *A. sonchi*. Linn.

Walker makes his species identical with the *A. lactucæ* of Linnæus and *A. ribis-nigri* of Mosely, and describes it as follows:

"*Winged-female.*—Grass green; head and chest black above and below; fore border and hind border of the fore chest (prothorax) green; a row of black spots on each side of the abdomen; feelers black, a little longer than the body; mouth (beak) pale yellow, with a black tip; nectaries black, as long as one fourth of the body; legs pale yellow, rather long; feet and tips of thighs and shanks black; wings colorless, much longer than the body; wing ribs and rib-veins pale yellow; brand (stigma) pale buff; branch veins brown, their tips slightly clouded."

Another variety is described by him as yellowish green, varied with pale red. Another as small and gray, with black on the thorax; honey-tubes yellow. A variety of the wingless female as small, oval, smooth, dull black or red, dark green toward the tip of the abdomen.

Passerini describes his *S. lactucæ* as new or at least distinct from any previously described under this name, marking with doubt the *Aphis lactucæ* of Schrank as synonymous

"*Wingless-female*—Green, oblong-ovate, convex; abdomen manifestly annulate with white-powdered incisures; honey-tubes greenish-yellow, fuscous at the tips; tail greenish, ensiform, and half the length of the honey-tubes.

"*Winged-female.*—Pale green, when young somewhat purplish, the dorsum transversely rugose; antennæ fuscous, first and second joints greenish white; wings hyaline, veins fuscous, subcostal vein and stigma dull greenish.

"*Pupa* and wingless individuals similar, wing-cases powdered with white.

"Differs from *S. malvæ* in the powdered marks on the abdomen, and in the longer tail.

"Found on the bracts, peduncles and flowers of *Lactuca sativa* and *L. virosa*, in Autumn.

"Walker, under his *A. lactucæ* seems to confuse this species with *Rhopalosiphum lactucæ*. Kalt."

Buckton adopts Kaltenbach's species as the true one, considers it as synonymous with Passerini's, and describes it as follows:

"*Wingless-female.*—Length .075 inches. Bright green. Some specimens more or less clouded with pink. Long oval. Head and thorax rather broad; distinctly separated from each other. Antennæ green, with paler basal joints. Vertex pointed and tufted Abdomen domed, wrinkled and shining, with seven black dots within the edge of the connexivum. Cornicles thin, green, black at the tips Tail long and yellow. Legs green, with black femora joints. Tibiæ points and tarsi black. The posterior rings are pilose. Kaltenbach and Walker state that the cornicles are thicker in their midst.

"The *Pupa* varies much in color, such as green, brown or pink. The *larva* much ringed and shining. Wing-cases green with black tips. The carinæ of the abdomen green and corrugated. Legs shorter than in the larva or imago. The pink varieties often have a green dorsal band and faint lateral stripes.

"*Winged-female.*—Expanse of wings .29 inch, length of body .09 inch. Head, prothorax and thorax shining black or dark brown. Ab-

domen green, with six or seven transverse dark bands, the middle band being the broadest. Four lateral spots on each edge; cornicles green with black tips. Antennæ long and thin. Legs pale yellow ochre, with black femora and tibiæ points. Wings with yellowish insertions and grayish stigma; other veins brown.

"This species feeds on many plants, particularly *Lactuca oleracea*, *Lactuca scariola* (garden lettuce) *Sonchers*, *Crepis* and other plants. It may also be found on the leaves of *Ribes grossularia* and *Ribes nigrum*. The branching of the veins is somewhat variable, and the length of the antennæ also differs in some individuals. The insect is commonly met with throughout the summer. It does not answer the description given by Koch of his *S lactucæ*, which certainly must be a different species."

The following description was taken from specimens found on common garden lettuce at Carbondale, Illinois, in 1878:

Wingless female—Antennæ long and slender, extending back quite to and even beyond the tip of the abdomen; body of a rather long ovate form, rather narrow in front, thorax not much broader than the head. Legs very long; honey-tubes very long and slender, in some specimens distinctly though not strongly enlarged in the middle, extending beyond the tip of the abdomen, equal in length to one-fourth the length of the body; tail very prominent, slender and elongate conical, about half the length of the honey-tubes; beak rather short, reaching only to the insertion of the middle legs The hinder portion and sides of the abdomen of some individuals are more or less roughened, and sparsely covered with little tufts of hair.

Color.—Body rather pale pea-green, many specimens showing from one to three deeper green longitudinal stripes on the abdomen; head pale; legs, antennæ, honey-tubes and tail transparent white; tarsi, and the antennal sutures in some specimens, dark.

Length of body about one-tenth of an inch.

An imperfect winged specimen found among these, whether the same species or not, I am unable to say, had the body dull black, smaller in size than the wingless; wings and other characters showing it to belong to this genus. Obtained in May.

It is more than probable that this and several other species found on garden vegetables will ultimately be found to be but varieties of one or two distinct species, the varietal characters probably being caused by the difference in plants and the changes produced by cultivation.

Siphonophora polygoni. Walk. The Knot-weed Aphis.

A plant-louse found during the early part of summer on the common knot-weed (*Polygonum persicariae*). As this species of knot-weed is common in England as well as here, our species is therefore in all probability identical with the English species. I searched carefully during the past summer for specimens but was unable to find any, and am not aware that the species has been observed in Illinois, although it has been found in the United States.

The following brief description is from English authors:

Winged viviparous female.—Yellowish or greenish; head and thorax unusually broad; antennæ longer than the body; honey-tubes long,

passing the tip of the abdomen; legs with short stiff hairs on them; tail short. Head, prothorax and thoracic lobes brown; eyes red; ocelli distinct; abdomen marked with broken dark bands; honey-tubes black; tail yellow; legs yellow except the tips of the femora and tibiae which are dusky.

Length of body .07 inch; to tip of wings .15 inch.

SIPHONOPHORA? SALICICOLA. Thos. Aphis found on the Willow

Found on the Willow at Peoria, Illinois, in the latter part of June, by Miss Emma Smith.

I have only seen specimens of this species in glycerine, and hence am unable to give a full description, or even to determine positively in reference to its generic characters.

Winged individual.—Antennæ seven-jointed and of the usual form in this genus; apparently on tubercles, but of this I could not be positively certain; all the joints transversely wrinkled. Beak of medium length. Tail distinct, curved upward, expanded in the middle and about half the length of the honey-tubes. Honey-tubes long, reaching beyond the tip of the abdomen, cylindrical and slightly enlarged at the base.

Wings of the form and neuration usual in this genus; the second fork of the third discoidal vein is very near the tip, the distance to the tip being not more than one-sixth of the distance to the junction of the first fork with the third vein; third vein obsolete at the immediate base; the subcostal vein runs very nearly parallel with the costal to the stigma and is transparent yellow in the specimens; stigma elongate, narrow and acutely pointed at the apex, yellowish. The specimens are so shrunken that it is impossible to ascertain the size, but it appears to be rather above medium.

The uncertainty in reference to the antennal tubercles, and the character of the plant on which this species is found, cause me to seriously doubt its belonging to this genus, the species of which seldom attack trees, and the shrubs on which they are found appear to be confined mostly to the Rosacea.

SIPHONOHORA VERBENÆ. Thos. The Verbena Aphis.

Found at Carbondale, Illinois, November 9th, on the leaves of Verbena.

Wingless female.—Of a bright pea-green color throughout, some specimens yellowish-green, with two or three deeper green longitudinal stripes on the abdomen. Eyes black. Antennæ about as long as the body, pale and colorless except at the tips where they are dusky Honey-tubes reaching to or slightly beyond the tip of the abdomen, cylindrical, pale. Tail rather short, whitish. Beak extends rather beyond the middle legs. Body regularly ovate, somewhat elongate; medium size.

It is possible this is not fully grown.

Siphonophora rubi. Kalt.

A few specimens of this species were found on the blackberrry during the summer; no winged specimens were obtained, but the characteristics were sufficiently marked to determine the species satisfactorily. As my material is not sufficient to give complete specific details I copy Buckton's description in full:

"*Wingless female*—length of body .13 inch; of antennæ .14 inch.

"Large, shining green, slightly pilose. Long oval. Head narrow. Antennæ and legs long and green. The articulations of the former are slightly marked with black Eyes brownish red. Cornicles long, curved, and slightly thickened at their bases, then constricted, inflated at their midst, and finally expanded at their mouths. Cauda large and hairy. Tarsi black. Numerous during the month of May and June, clustered under the leaves of the bramble, *Rubus fruticosus*, and the wild raspberry, *Rubus idaeus*. Later in the year, about the end of July, they are common on the broom, *Sarothamnus scoparius*. Often they may be seen ranged with much regularity on each side of the sutures of the green pods, all their heads being turned in one direction. Walker describes the nectaries as tipped with black.

"*Winged female*—length of body .15 inch. Expanse of wings .42 inch. Antennæ longer than the body. Cornicles nearly one-third the length of the body. Very large. Wholly green, but rather redder on the thorax. Head with conspicuous red ocelli. Antennæ nearly half as long again as the body. Rest of the insect like the larva. Wings iridescent, with yellowish insertions, yellow cubitus and stigma. The whole insect is slightly pilose.

"*Winged male*—length of body .10 inch. Expanse of wings .38. Antennæ longer than the body. Cornicles one-fifth as long as the body.

"Green. Head very broad and black. Ocelli distinctly marked. Antennæ very long. Back, thorax and prothorax green, with black linear thoracic lobes and small scutellum.

"The abdomen very small, not equal to the length of the head and thorax together. Four or five transverse dark green dashes on the dorsum. Cornicles as in the winged female. Legs disproportionably long. Cauda small. Wings remarkably large. Stigma gray. From the under side, the valves which support the male organ can be easily seen. Some males are redder than the above. Occasionally the wings want the second cubital fork. Also the clavate characters of the nectaries is more marked in some specimens than in others.

"The males are not uncommon on the raspberry during the month of November."

Siphonophora pisi. Kalt. (The Green Dolphin).

Syn. *Aphis ulmariae*. Schr.
onobrychis. Fonscol.
pisi. Kalt.
lathyri. Walk.
Siphonophora pisi. Koch.
ulmariae. Pass.

This species, which is called by the common name "Green Dolphin" in England, sometimes appears in large numbers on the field pea, infesting the young shoots and leaves of the vine, and, according to my observations, even the young pod. Although found every year, it does not often appear in sufficient numbers to seriously injure the plants. It is also found frequently on several other plants as the meadow sweet (*Spiræa ulmaria*), sweet pea (*Lathyrus odoratus*), shepherd's purse (*Capsella bursa-pastoris*), the stinging nettle (*Urtica dioica*), etc. Although the past season was quite a favorable one for the increase of Aphides, I found but few specimens of this species, and these mostly sporadic. The descriptions given of the specimens found in Europe correspond so exactly with the characters of those found in this country, that they might be adopted without a single variation, but the description found below is from specimens found in Illinois.

Winged female.—Length of body about .10 inch, to the tips of the wings about .20 inch. Antennæ very long, extending to the tips of the honey-tubes, slender. Body rather elongate, sub-fusiform, acuminate behind; legs long and slender, and wings rather more than usually long. In the fore-wings the stigma is elongate and narrow, the apex being elongate pointed, the inner angle being so obtuse as to be almost obliterated; the fourth vein slightly curved except in the middle, where it is somewhat sharply curved. Head usually dull yellowish, or greenish yellow. Thorax pale brown, olive yellow or ocher yellow. Eyes black or dark brown; antennæ black or dusky, except the basal joints, which are whitish or pale green. Abdomen convex, smooth, sea-green. Honey-tubes varying from green to blackish, very long, extending beyond the tip of the tail, their length fully equal to one-third the length of the body (exclusive of the tail), usually described and figured as cylindrical or slightly enlarged toward the base; while this is the case with the apterous individuals, in all the winged specimens I have examined they are slightly enlarged in the middle portion. Tail distinct, elongate-conical, slender, curved upward and usually yellowish or pale green, less than half the length of the honey-tubes. Wings pellucid, costal and sub-costal veins pale at the base, yellowish or darker towards the extremity; discoidal veins dark and distinct; stigma pale brown or ocher color.

Wingless female.—Large, length of body .11 inches. Shining, bright green of various shades, "sometimes mealy and dull, showing the darker green tint below in transverse bands." Elongate oval, acuminate behind. Eyes black; front of the head and two first joints of the antennæ somewhat paler than the rest of the body; tips of the femora and tarsi, and tips of the honey-tubes, dusky. Tail about half as long as the honey-tubes, rather slender, elongate conical. Antennæ about as long as the body. Beak rather short.

Passerini says *Siphonophora gei* is also a synonym of this species.

Taken in latter part of May at Carbondale, Illinois.

Siphonophora gerardiæ. n. sp.

This little species is given with some hesitation, as but few specimens were observed, but as these were partly wingless, and in various stages of growth, and were observed on the same plant at two points some distance apart, I feel warranted in describing it as new and

giving it a name in accordance with what appears to be its sustaining plant.

Winged individuals.—Antennæ on distinct tubercles; the first joint about twice as long as the second; third and seventh about equal in length; fourth and fifth about equal, and each about two-thirds the length of the third; sixth about half as long as the third; whole length about equal to the length of the body.

Body entirely blackish with a purplish tinge; posterior legs black; the other two pairs with the femora and tibiæ a transparent yellowish white. Honey-tubes black, slender and cylindrical, about one-fourth the length of the body and reaching considerably beyond the tip of the abdomen. The first fork of the third vein bends strongly forward toward the apex so as to bring it quite near to the fourth vein; second fork nearer the apex of the wing than to the third vein; wings honey-yellow at the base.

Pupa.—Wing-cases dark green; first two and last two joints of the antennæ black; other markings as in the winged specimens.

Wingless individuals.—The body is dark with a greenish tinge, and has a dark or black median dorsal line. Tail conical, about one-half the length of the honey-tubes, black.

Found on the little stems of *Gerardia tenuifolia*, at Carbondale, Illinois, latter part of September. Size small. Length to tip of wings .12 inch.

SIPHONOPHORA HEUCHERÆ. n. sp.

In the collection received from Prof. Bundy, and, with the exception of the color as given in his note, described from alchoholic specimens.

Winged individual.—The front wings have the second fork of the third vein much nearer the apex of the wing than it is to the third vein; fourth vein regularly curved, and in some of the specimens it is forked near the tip; the costal vein curves outward very distinctly near the base, and is partially followed in this by the sub-costal vein. Honey-tubes long, slender, and cylindrical, reaching to or beyond the tip of the tail; tail distinct, quite prominent, slender, sub-cylindrical, scarcely conical, about half the length of the honey-tubes. The abdomen is short, broad, and very obtusely rounded at the tip. Body slightly hairy, and some of the hairs apparently capitate. Antennæ quite robust and extending to or beyond the tip of the abdomen, seventh joint as long or longer than the third; sixth very short, about one-third the length of the fifth; fourth about two-thirds the length of the third; tubercles distinct.

Wings transparent, veins quite distinct, brown or fuscous; stigma pale brown.

Length of the body .07 to .08 inch; to tip of the wings .13 to .14 inch.

Pupa.—Honey-tubes not reaching the tip of the abdomen.

Wingless.—Ocelli very distinct, with a little tubercle in the front of each ocellus; honey-tubes not reaching to the tip of the abdomen.

Prof. Bundy furnishes the following note in reference to this species:

"On *Heuchera hispida.* June, Sauk City, Wisconsin. *Winged female.*—Abdomen smoky green, darker on the dorsal aspectof the thorax and head, this part being almost or quite black. At first

green throughout, deep sea green on the abdomen, paler elsewhere; head with a tinge of yellow; wings smoky iridescent; legs pale, darker at the joints, lightest toward the coxæ, reddish on the tibiæ. Pronotum in old individuals dark brown or black, bordered with green. Young female with pale wings, pale toward the base and tinged with yellow."

I think it quite probable that what Prof. Bundy calls the "young female" is the winged male.

The species appears so be quite distinct; and so far as I can ascertain is the first found on this genus of plants, usually designated by the common name "Alum-root."

SIPHONOPHORA CUCURBITÆ. n. sp.

Found on the leaves of squash vines at Carbondale, Illinois, in May, and described by Miss Nettie Middleton.

Winged specimen.—Large and green. Antennæ very long, reaching to or beyond the tip of the tail; third joint a little longer than the fourth; fourth about the same length or very slightly longer than the fifth; sixth not more than one-fourth or one-third the length of the fifth; seventh longest. Wings transparent, veins slender; the first fork makes a very acute angle with the third vein; second fork rather nearer the third vein than the apex; fourth vein curves sharply and approaches somewhat closely, in its middle, to the first fork; stigma elongate and narrow. Honey-tubes long, slender, and cylindrical, extending beyond the tip of the abdomen, but not to the tip of the tail, about one-fifth the length of the body. Tail long, sub-conical, more than half the length of the honey-tubes (in the wingless specimens). The form of the body in both the winged and wingless specimens is elongate and fusiform, the latter being slightly broader than the former. Length of body .10 inch; to tip of the wings .18 inch, and some appear even to exceed this size. Body green; head paler, more or less yellowish; thorax pale brownish or fawn-colored, or tinged with this color; abdomen green with a darker green median line; first and second joints of the antennæ pale, third dark, seventh light, shades of light and dark more or less alternating; honey-tubes green at base, changing to fuscous at the tip; tail greenish; eyes brown; stigma pale.

Wingless specimen.—Green, with few markings. Body slightly broader than the winged specimens, and elongate ovate; the abdomen tapering posteriorly to the elongated tail, which is elongate conical, its length more than half and almost equal to that of the honey-tubes. The honey-tubes are long, somewhat robust, and cylindrical, they extend beyond the tip of the abdomen, although the posterior tapering segments are much drawn out, but not to the tip of the tail; in most of the specimens examined under a strong magnifying power they appeared slightly and minutely wrinkled transversely, or what may perhaps better describe the appearance, pustulate or scaly. The length of body is usually rather greater than that of the winged specimens.

In both, the antennæ and front of the head are hairy, and many of the hairs appear to be capitate.

This species is very closely related to *Siphonophora dirhoda*, and if it were not for the fact that the latter is not known to feed on cucur-

bitaceous plants, I would have at once decided that the specimens found by Miss Middleton belonged to that species.

There are other species of *Siphonophora* that infest cultivated plants in Europe, which so far have not been noticed on the same plants in this country, but as it is likely an examination will show that they are here, I will mention a few which are most likely to be found.

SIPHONOPHORA TANACETI. Linn. The Tansy Aphis.

This species feeds on the common Tansy *Tanacetum vulgare.*

Winged individuals of a clear brown color, with lighter shades; eyes red; legs black, hairy; honey-tubes passing the tip of the abdomen; tail distinct, yellow; wings large. Wingless individuals, with the neck, hind margin of the prothorax and broad margins of the abdomen, yellow.

Length .07 to .10 inch; to the tips of the wings .19 inch.

SIPHONOPHORA FRAGARIÆ. Koch. The Strawberry Aphis.

This species feeds on the strawberry plant, especially the underside of the leaves and the stalks of the unripe fruit. A species which I presume is identical with this has been occasionally observed on strawberry plants in this state, but so far I have been unable to procure specimens, and hence give a brief description from Koch's work.

Winged female.—General color brownish-yellow, or ocher; the head, antennæ, thorax and honey-tubes black; a row of black dots along each lateral margin of the abdomen, and two larger spots of the same color behind the honey-tubes; legs brownish-yellow; tail prominent and yellow. Honey-tubes very long, extending beyond the tip of the tail. The stigma of the front wings very narrow (as shown in his figure.)

Wingless female.—Pale dull green or rusty-yellow; the head brown or dusky; antennæ and honey-tubes black.

This is a rather large species, the body being from .10 to .12 inch.

In 1875, Professor Riley received from Mr. W. W. Hopkins, of Kansas City, specimens of a plant-louse which was injuring his strawberry plants. From a copy of his notes on these specimens, which he very kindly sent me, I learn that they differ from Koch's description in wanting the spots on the sides of the abdomen in the winged female; and in the head of the wingless female being yellow; yet he decides, without serious doubt, that they belong to Koch's species. He names this variety *immaculata.*

SIPHONOPHORA MENTHÆ. Buckton.

Wingless viviparous female.—Length of body .08 inch, of antennæ .10 inch, of honey-tubes .025 inch.

Long oval, narrow at the head, very broad at the middle of the abdomen. Lively green, transparent, and often permitting the eyes of the embryos within to appear as red specks. Abdomen usually exhibits delicate lines, as if they were sutures of horny plates. Antennæ very long, slightly olive at their tips. Frontal tubercles very large, and slightly gibbous, eyes red. Head, thorax and abdomen, consolidated,

and without perceptible separation. Cornicles cylindrical, greenish, and black at the tips. Legs long, hirsute; genua, olive; tarsi, black; conda, green.

Winged viviparous female.—Expanse of wings .26 inch, length of body 0.06 inch, of antennæ .07 inch, of honey-tubes .0.5 inch.

Bright green. Antennæ dark olive; the two basal joints green. Eyes red. Thoracic lobes and scutetlum olive. Abdomen carinated, with four dark spots within the folds. Nectaries fine and black. Legs green; hardly so long as those of the larva. Tarsi black. The gibbous character of the basal antennæ joints less marked. Wings with pale brown cubitus and stigma.

Some specimens show disjointed tranverse bars on the abdomen. (From Buckton).

Found early in July on the garden mint (*mentha viridis*) and later on the common broom (*Sarothamnus scoparius*).

Siphonophora Absinthii. Linn.

Aphis Absinthii. Walk.
Siphonophora Absinthii. Pass.

Length of body .08 inch, of antennæ .075 inch, of honey-tubes .012 inch.

Long oval, shining, dark brown, pilose, with small tubercles. Slightly powdered with white. Frontal tubercles small. Eyes red. Legs and cornicles rather short, brown. Tail rather obtuse.

Numerous in August under the leaves of the wormwood, *Artemisia absinthium.* (From Buckton).

Genus. PHORODON. Pass.

Beak moderately long, reaching the middle coxæ. Antennæ hardly longer than the body; the first joint bluntly toothed or gibbous at the internal margin; fourth and fifth joints nearly equal; third joint longest; the inner margins of the tubercles developed into a blunt tooth. Honey-tubes long, cylindrical and sometimes slightly clavate. Tail short. Legs short, or of but moderate length.

The chief characteristics are the toothed tubercle and the gibbous antennal joint. The genus is closely allied to *Siphonophora* on one side and *Aphis* (restricted) on the other; and has no substantial characteristics.

PHORODON HUMULI. Schrank. The Hop Aphis.

Our species is probably identical with the Hop Aphis, of Europe, as no appreciable differences between the characters of the two can be observed.

This is, perhaps, one of the most injurious of the family, in some instances almost entirely destroying the hop crop. As an indication of the immense loss which it sometimes occasions, we mention the fact that in England it occasioned, in a single year, a loss of over $400,000 on excise duty on hops; in other years since that time the loss has been even much greater.

On account of its injurious effect upon this important crop, I give a more extended description of its various stages, and a fuller account of its habits, than I have usually done with reference to the other species.

The *larvæ*, or young lice, are of a transparent yellowish white color, with black eyes, but as they increase in age and size, they change to green.

The *pupa*.—Green throughout, and slightly pilose, the head and thorax broad and squarish; on the top of the head are two red dots which mark the spots where the ocelli will appear. Even while in the larvæ state the interior prolongations of the antennal tubercles are very prominent, and the gibbous form of the first joint is very apparent. At the time they commence to enter the pupa state the abdomen assumes an oblong shape with the sides parallel; after the wing-cases appear the oval form begins to be assumed. Eyes red.

Wingless viviparous female.—It is small, oval in form, and pale green throughout; eyes red. Antennæ somewhat shorter than the body; legs of moderate length; honey tubes long, extending beyond the tip of the body, cylindrical; tail very short and conical; the tubercles and first antennal joints as described. Slightly deeper green spots are sometimes seen on the back; but the usual green color prevails throughout all the parts.

Winged viviparous female.—General color pale green. Antennæ about as long as the body, greenish at base, apical portion dusky; eyes reddish; head, band on the prothorax, lobes of the thorax, one or two cross stripes on the abdomen, and a row of dots along each lateral margin of the abdomen dark brown or black, honey-tubes green; tail pale; legs green with dusky joints. The frontal tubercles and first joint of the antennæ less prolonged than in the pupa or wingless individuals. Length of the body about .07 of an inch; to the tips of the wings .15 inch.

Winged male.—Size small, body short and narrow; head very broad and prominent in front; abdomen not broader than the thorax. Color wholly green, except the lobes of the thorax, which are olive. Length of body .05 inch; to the tips of the wings .11 inch.

The *Aphis mahaleb* of Fonscolombe is but a variety of this species, and has the same injurious habits; it is described below.

According to Dr. Fitch, this species had not been known in this country to an injurious extent until 1862, when it suddenly made its appearance in excessive numbers; and, as a consequence, the hops were injured to such an extent that they were rendered valueless in many yards, and in the best were deficient to the extent of from fifteen to

twenty-five per cent. According to this writer, the disease known to hop-growers as "honey dew" and "black blight" are caused by this Aphis. As the young lice attach themselves to the under side of the leaves, and as is the custom of the insects of this family, pump the juices so rapidly as to more than supply their wants, the overplus exudes from the honey-tubes and drops on the upper surface of the leaves below them, thus readily accounting for the presence of the honey-dew. This deposit of honey-dew, being subject to the action of the atmosphere and alternately moistened by the dews at night and dried by the sun during the day, is decomposed and changed from a transparent fluid to a black substance resembling soot, on which account the term "black blight" is applied to it.

It has been supposed by many observers that dry weather favors their increase, while wet weather retards it, and both Fitch and Harris favor this idea as applied generally to plant-lice. My own observations do not wholly agree with this opinion, as I find that dry seasons appear to favor the increase of some species while others appear to be more abundant during hot moist seasons. Heavy rains, as a matter of course, are unfavorable to all kinds, but there is a difference in the effect of moisture and of heat on different species. Dr. Fitch quotes a paper read by F. W. Dogget, Esq.: "Upon the Weather in connection with Aphis Blight and the growth of Hops," before the London Meteorological Society, in 1854, in which he says that "the years in which an excess of rain had fallen in or about the three months ending in September of the previous year—the three following months and the March following being both comparatively deficient in rain—were followed by a short crop of hops, arising from the Aphis blight; and on the contrary, when the quarter ending in September of the previous year had been dry, an average or large crop had been grown. And when the quarter ending in September had been wet, and the December quarter very wet, a like result had followed."

But following this comes this very important statement: "This however was found to be modified by the temperature. When the weather of the previous year has been such as to indicate a blight, there may be a partial recovery if the temperature succeeding should be hot—with few exceptions, all the small crops were grown in years in which the temperature of the three summer months was below the average, and the large crops were produced in those in which the temperature of like period was high." I think it is apparent from these facts that in this case these differences are owing chiefly to the condition of the leaves; if the season is hot and dry the leaves are less succulent, and unfavorable to an increase of the Aphides, but when the conditions are such as to render them succulent the insect will increase.

The operations of this species are very briefly and clearly described thus by an old author: "The progress and usual termination of the aphis blight may be thus described. The flies on their first arrival, immediately suck the underside of the upper small leaves of the vine (stem) and thus they deposit their young, upon the most succulent part of the plant. The multiplication of the lice is so rapid, that the leaves become so thickly covered as scarcely to allow a pin to be thrust between them. They quickly abstract the juices of the bine, so that the leaves assume a sickly brown hue, and curl up, and the

bine itself ceases to grow and falls from the pole, the lice continuing till they perish for want of food; and thus, without the intervention of a favorable change, the crop is destroyed, and the grower may often consider himself fortunate if the plant recovers a due amount of vitality to produce a crop in the following year, for occasionally the hills are killed by the severity of the attack. This description of course applies to the most severe and unusual blights."

Although I give at the end of the list of this group of plant lice an account of the remedies for their destruction, it is proper to make the following statement here in reference to the remedies thought to be applicable to this species.

Kirby recommends rubbing the leaves between the fingers, but even with the cheap labor in England this was found to be wholly impracticable if ever attempted. Syringing, with this and other species, has been found ineffectual. Dr. Fitch thinks it is possible to contrive some method of confining tobacco smoke around the plants and thus destroy them. If this could be done, without too great expense—which is doubtful—it would be effectual.

Buckton, the latest English authority on aphides, remarks as follows in reference to remedies for this species: "It is believed, however, that hitherto all plans and schemes practically have failed, and that the farmer will find henceforth his best policy to consist in the study of the economy of the aphis under notice, and in a furtherance, as far as may be, in his power of the increase of some of the natural foes which prey upon it."

Phorodon humuli var mahaleb. Fonsc.

Aphis mahaleb. Koch.
Myzus mahaleb. Pass.

Wingless viviparous female.—Length of body .11 inch. Length of antennæ .07 inch, of honey tubes .03 inch.

Rather larger than *P. humuli;* abdomen also broader. Figure long oval. Head and thorax, taken together, equal to only one-fifth of the length of the body. Color yellowish-green, with three darker green stripes on the back. Head narrow. Frontal tubercles porrected, but less so than in *P. humuli.* First antennal joint gibbous. Eyes red. Legs and antennæ green.

Winged viviparous female.—Expanse of wings .28 inch. Length of body .075 inch; of antennæ .07 inch, of honey tubes .015 inch.

Bright green, shining. Head, lobes of the thorax, antennæ and legs, with the exception of the upper parts of the femora, black. Abdomen with several interrupted, dark, transverse bands, and three large spots on the carina. Two black spots under the insertions of the wings. First antennal joint gibbous.

Common in May and June on the sloe, and also on the garden plum, under the leaves of which it forms considerable companies, though not so large, perhaps, as those of *Aphis prunî.* (From Buckton.)

Phorodon scrophulariæ, n. sp.

This somewhat singular species was found by Miss Middleton, on *Scrophularia nodosa;* in the vicinity of Carbondale, Illinois, April 13, 1878.

Wingless individuals.—(The only ones seen).—Antennæ on distinct tubercles, seven-jointed, as long or longer than the body; third joint long, but not so long as the fourth and fifth united; the inner margin of the tubercle and first joint, each very distinctly extended and enlarged into a prominent rounded and blunt process, more distinctly so than any other American species with which I am acquainted. Honey-tubes extending beyond the abdomen and distinctly enlarged in the middle. Tail short and conical.

The very young are green or pale pink. Eyes dark brown or black. Those that appear to be full grown vary in color from a reddish-brown to a brownish black on the upper side, paler beneath. Legs pale throughout. Of medium size. In some individuals the honey-tubes do not appear distinctly enlarged in the middle.

I have considerable doubt as to the proper generic position of this species, as the inner margin of the tubercle and first joint are not toothed but tuberculiform. The form of the honey-tubes would place it in *Drepanosiphum.*

Note.—The plant on which this species was found was immature, it was supposed to be *S. nodosa,* but there is reason to doubt this, and the matter cannot be decided until next season.

Genus MEGOURA. Buckton.

"Head broad; front flat; rostrum rather short. Antennæ much longer than the body; frontal tubercles large; remote at their bases; third joint longest; second joint twice the size (length) of the first; fourth joint longer than the fifth; seventh joint setaceous. Abdomen globose, convex; cornicles (honey-tubes) long, dilated in the middle, expanded at the ends, or trumpet-mouthed. Cauda (tail) markedly long and thick. Wings and legs as in *Siphonophora.*" Buckton.

Although some of the characters of the following species may vary slightly from Buckton's generic description, yet I am fully satisfied that it belongs to this genus, and that Buckton was clearly justified in forming the genus.

Megoura solani. n. sp.

A very singular species of plant-louse found on the tomato.

Winged female.—Antennæ seven-jointed, a little longer than the body; first and second joints short; third and sevènth longest, nearly equal; fourth a little shorter than the third; the fifth not quite as long s the fourth; sixth about half or less than half the length of the

fifth; tubercles prominent. Honey-tubes extending beyond the tip of the abdomen; excessively enlarged in the middle, and expanding at the tips in trumpet shape. Tail of moderate length, about one-third as long as the the honey tubes, conical. Wings as usual in *Siphonophora*; fourth vein strongly and regularly curved; second fork about equally distant from apex and third vein; stigma elongate, slender and pointed. Size rather large.

General color greenish; tail greenish yellow at the base, darker at the tip; body greenish or pale greenish yellow; antennæ dusky. Another winged specimen, probably a male, varies considerably from the above description; the second fork of the third vein is very short and near the apex, and in some cases is absent in one wing and present in the other. Honey-tubes, with the enlargement less than the preceding, and carried nearer to the apex; apex with the expanded rim. Antennæ also differs slightly in the respective length of the joints. Head and abdomen olive green; thorax and eyes black; antennæ dusky; legs pale, dark at the knees and tarsi.

Pupa.—Elongate oblong in form; very pale green, with a dark green stripe along the middle of the back, with apparent whitish powder sprinkled sparsely over the body. Head whitish; base of the antennæ greenish-white, rest pale fuscous, dark at the tips of the joints and at the tip of the antennæ; eyes brown; femora greenish-white; tibiæ fuscous, tarsi darker. Honey-tubes long, slender, pale at base and dusky at the tips. Tail short, coincal, greenish.

Although quite a number of these insects were obtained, they were never found congregated at one point, but scattered singly over the leaves and stems of the tomato plant. Their feet were clogged with the viscous fluid which exudes from the plant, so as to give them the appearance of being club-footed.

The winged females were allowed to remain too long after capture before being described, hence the color had somewhat faded and is not given in detail on this account. My note on these faded specimens is as follows: "Legs pale; head dark; prothorax pale, with a fuscous streak; disk of the thorax black; base of the abdomen pale, with a large dusky spot on the dorsum; antennæ dusky. The colors have evidently faded."

Taken in May, at Carbondale, Illinois.

Genus MYZUS. Pass.

Very similar to the genus *Aphis* in its restricted sense, but in some respects closely related to *Phorodon*.

Antennæ about equal in length to the body; the tubercles on which

they are situated, in the males, have the inner margin prolonged; the inner margin of the first joint advanced or gibbous, but not toothed.

Honey-tubes rather long; tail about one-third the length of the honey-tubes.

There is really no necessity for this genus, and it ought to be suppressed.

MYZUS CERASI. Fab. The cherry-tree Aphis.

This is another introduced species of this numerous family, and, like most of the European or Eastern insects which have been introduced into this country, appears to thrive equally well, if not better, than its congeners, as it is in some sections the most common and abundant species. Goreau describes the species found in France as averaging a little less than one-tenth (.08) of an inch in length; body black; antennæ black; with the middle portion yellowish; abdomen black; legs black, the tibiæ pale yellowish; wings pellucid. Found on the under side of the leaves of the cherry-tree, which they roll and crisp.

As seen in this country, the wingless female measures about five or six hundredths of an inch in length, the winged individuals measuring to the tips of the closed wings, rather over one-tenth of an inch. The winged female is of a shining black color, the abdomen is nearly twice as broad as the thorax, giving it an ovoid or egg-shape, with the smaller end in front, which is more clearly shown in the wingless individuals; antennæ black, about three-fourths the length of the body; the beak short, black or dusky; legs black except the basal half of the thighs and the basal portion of the tibiæ, which are pale or whitish; wings pellucid; the base, outer margin and rib-vein, white; remaining veins usually dusky; the second vein is about a third farther from the first at its tip than at its base. The honey-tubes long cylindrical and black; tail one-third the length of the honey-tubes. Sometimes the abdomen is clouded with yellowish green.

The wingless females agree very nearly with the above, so far as relates to the body. The antennæ are whitish, except the two basal joints and apical half; beak, whitish, with the tip only black; legs white; feet, tips of tibiæ and tips of thighs, black. The abdomen has an elevated lateral margin.

The young larvæ are at first dull white or pale yellow, but grow darker as they increase in age.

This infests the leaves of the cultivated or garden cherry-tree (*Cerasus vulgaris*), to the varieties of which it appears to be exclusively confined. They hatch out in the spring as soon as the leaves begin to unfold. There are a number of broods produced in the same manner, and similar in habits to the other species of the genus; although the summer broods appear to be exclusively females, among them we often find winged individuals. They often become very numerous, covering the under side of the leaves with their colonies, and sometimes piled one upon another. Dr. Fitch states that in 1855 the leaves of his cherry trees were literally covered with these lice; that at the time they were most abundant he made an estimate of the number on a single small tree, but ten feet high, and was astonished to find this to be at least twelve millions.

When very numerous, this species does not confine itself to the leaf alone, but extends its colonies to the stalk, and even to the tender twigs, and buds, and fruit stems, and occasionally to the green fruit. The tough, rigid texture of the cherry leaves prevents them from becoming wrinkled, like those of some other trees; but the margins curl, and there is a tendency to curl backwards. When they attack very numerously the twigs and young leaves, the extraction of the sap causes them to shrivel and die. This species is quite common in Illinois, and according to Walsh, has been observed on the plum; but this fact appears somewhat at variance with the fact that it will not develope on any species of the cherry except the one mentioned.

Since the previous sentence was written this species appeared here (1878) in great abundance, numbers covering the twigs and axils of the small limbs of both young cherry and plum trees; showing that Walsh was correct. I suggested a means of destroying those on the small trees, but before it was tried, copious rains, or some other cause, suddenly swept them away.

Myzus persicæ. Sulzer. The peach-tree Aphis.

This is also an imported species. It lives on the underside of the leaves of the peach-tree, causing them to thicken and curl, forming hollows beneath and corresponding crispy swellings above, and causing them ultimately to perish and drop off prematurely.

The winged female—Is very variable in color, some to the naked eye appearing quite black, whilst others are brown, olive brown or greenish black. The honey tubes slender and cylindrical; tail pointed and black. The third joint of the antennæ sometimes tuberculated. Beak reaches nearly to the insertion of the third pair of legs. Length of body .08 inch; to the tips of the wings .18 inch.

Wingless females.—Ovate, rusty red; head broad, and the antennal tubercles enlarged on the inner side. Antennæ legs and honey tubes greenish; honey-tubes long and cylindrical.

Winged male.—Bright yellow. Head, band on the front or prothorax and some transverse streaks on the back, brown. Eyes red; honey-tubes black; tail small and black.

It is common on the nectarine as well as the peach; and is found from May to October.

Myzus ribis. Linn.

Aphis ribis? Linn. Fabr. Schr. Kalt. Walk.
Aphis ribicola? Kalt.
Rhopalosiphum ribis. Koch.
Siphonophora ribicola? Koch.
Myzus ribis. Pass. Buck.

This species varies very greatly, and it is possible that more than one species is included in the above synonymy, but from all the facts I am at present able to obtain I prefer to consider these differences as varietal rather than specific.

Buckton's description from English specimens found on the red currant (*Ribes rubrum*) and gooseberry (*Ribes grossularia*) is as follows:

Apterous viviparous female.—Length of body .085 inch; of antennæ .09 inch; of honey-tubes .015 inch. Long oval. Shining yellow or green, with darker green mottlings. Front flat, garnished with short bristles, as also are the sides. Antennæ long and very fine. Honey-tubes, pale green. Eyes bright red. Tail obtuse. Legs yellow or greenish.

Under a high magnifying power these bristles are capitate, a fact not in accordance with the experience of Passerini, as regards the Italian species.

Pupa.—Large, shining yellow or green. Two brown spots on the occiput. Abdomen convex and glistering.

Winged viviparous female.—Length of body .10 inch; antennæ .09 inch; honey-tubes .02 inch. Bright greenish-yellow. Head pale olive. Eyes red. The three ocelli obvious. Antennæ fixed on small tubercles. Prothorax with an indented olive band. Thoracic lobes brown. A stellate spot is seen on the post thorax, succeeded by six or seven irregular transverse bands on the abdomen of varying thickness (width); four or five spots on each lateral edge. Honey-tubes green or olive, cylindrical, or at least very slightly clavate. Legs green, with olive femoral points and tarsi. Wings broad, with yellow insertions, greenish sub-costa and veins. Stigma grey. This he says is found plentiful on the plants mentioned, from May to July.

The species which Koch describes as *Rhopalosiphum ribis* is found on the currant in May, congregated on the underside of the leaves and causing them to cup and blister as is the case in this country.

The *winged specimen* is bright yellow; the head brown; eyes black or dark brown; prothorax yellow; the disk of the thorax or thoracic lobes, black; abdomen bright yellow, with black points along each lateral margin, and three transverse black bands on the posterior portion. Honey-tubes slightly enlarged towards the tip; extending rather beyond the tip of the abdomen, yellow. Tail rather short, yellow. Body elongate oval. Antennæ dusky, rather longer than the body; third-joint pustulate on the sides, longer than the fourth, but not quite as long as the seventh; the basal joints scarcely presenting any enlargement on the inner margin. Legs pale, dusky at the joints and tarsi.

The *wingless specimen*, as figured, is pale yellow; eyes small and dark; some ochreous points along the lateral margins of the abdomen; legs and antennæ pale; honey-tubes cylindrical, reaching tip of the abdomen.

The *Aphis ribicola* of Katlenbach or *Siphonophora ribicola* of Koch, as figured and described by the latter, is as follows:

Winged specimen.—Body grass-green; antennæ, head, eyes, thoracic lobes, spots on the abdomen, and the tail, black. The abdomen has a row of black dots along each lateral margin, and some partial bands of the same color. The honey-tubes, extend rather beyond the tip of the abdomen, are cylindrical, black at base and pale or yellowish toward the tips. Tail rather short, scarcely half as long as the honey-tubes, black. Discoidal veins of the forewings nearly straight; stigma long, narrow, with scarcely any inner angle at the point where the fourth vein arises. Fourth or stigmatic vein, curving regularly in the

form of the arc of a circle. Second fork of the third discoidal vein about equally distant from the apex and first fork. Wings are marked as reflecting a reddish color, and slightly smoky. Legs pale; joints and tarsi dusky.

Wingless specimen.—Pale pea-green; antennæ, head, honey-tubes and legs dull ochreous. Sides of the abdomen with darker green spots; transverse rows of white spots on the back or dorsal portion. Honey-tubes not extending beyond the tip of the abdomen, cylindrical. Tail prominent fully half as long as the honey-tubes; green.

Genus DREPANOSIPHUM, Koch.

This genus is characterized as follows, by Buckton:

Rostrum short; penultimate joint long. Antennæ long and fixed on the frontal tubercles; third joint longest; fourth and fifth joints equal; seventh setaceous, [and longer than any other except the third]. Honey-tubes large, curved and dilated in the middle. Legs moderately long. Cauda (tail) inconspicuous or none. Wings long and narrow. Cubital (third discoidal) vein twice forked. Stigmatic cell elongated towards the apex of the wing; other veins parallel to each other or nearly so. The membrane slightly clouded toward the marginal ends of the veins.

It is stated by Walker and others that there are no apterous, viviparous females in this genus, or in other words that all the females develop into pupæ and thence into winged forms before they produce young. The habits of the genus are sporadic; large companies are not formed, but they collect under the leaves in little groups rarely exceeding five.

I am not aware that any species of this genus has been positively detected in this country, but it is more than probable that future observations will bring one or more to light. I insert a description of *D. acerina*, Walk., as it is possible this is one of the species found on our maples. My *Siphonophora acerifolia*, which has been placed in that genus provisionally, agrees in several respects with the characters of *Drepanosiphum*, as for example the solitary habit, and I suspect also in the viviparous female being always winged.

Drepanosiphum acerina, Walk.

Aphis acerina, Walk.
Drepanosiphum aceris, Koch.

Wingless viviparous female.—Length of body .07 inch, of antennæ .10 inch, of honey-tubes .015 inch.

Bright orange with redder sides. Body deeply segmented and carinated. Head very broad. Eyes red. Front convex. Antennæ long and joints tipped with rich brown. Legs short and stout; femoral tips and tarsi brown. Body hirsute. The dorsum is very transparent, and shows the oil-globules within the abdomen. These often are disposed in regular rows. Rostrum short. The young specimens are lemon-yellow, with antennæ twice the length of their bodies, and with honey-tubes disproportionally large.

Winged viviparous female.—Length of body .08 inch. Expanse of wings .30 inch. Length of antennæ .19 inch, of honey-tubes .025 inch. Somewhat linear. Head and thorax nearly as wide as the abdomen. Bright yellow. Eyes large and red. Antennæ very long, more than twice the length of the body. The joints tipped with brown. Two thoracic lobes and the scutellum rich sienna brown. Two broad cross-bars on the abdomen brown. Cornicles very stout. Legs yellow. Wings ample. Cubitus, stigma, and veins either green or pale brown. Tail inconspicuous. Rostrum short, not reaching to the second coxæ. The whole insect is hirsute. (Buckton.) Feeds on *Acer psendoplatanus.*

DREPANOSIPHUM? QUERCIFOLII, Walsh.

Syn. *Aphis quercifoliæ*, Walsh.

"*Larva*, pale greenish. Incisures of the antennæ dusky. Upper surface of the body, except the scutel, dusky. Honey-tubes long, robust, dusky at tip. Legs long, with the terminal three-fourths of the femora, the extreme tips of the tibiæ, and the tarsi obfuscated.

"*Imago* blackish; prothorax and anterior part of the thorax sometimes varied with greenish; scutellum pale greenish. Honey-tubes two-thirds as long as the femora. Legs very long; basal half of femora pale greenish. Wings hyaline; veins brown, third discoidal vein hyaline at its origin; stigma and sub-costal veins pale yellowish brown; extreme tip of the front wings slightly fumose. Length of the wings scarcely .2 inch." "The antennæ attain the extreme tips of the wings when the wings are expanded; and the stigma is four times as long as wide, and very acute at each end On oak leaves."

Although it is impossible to state positively, from this description, the genus to which this species belongs, yet I think it almost certain that it should be placed in the genus to which I have assigned it. It is certainly not an Aphis, in the restricted sense, and the plant it infests would indicate that it is not a *Siphonophora.*

Genus RHOPALOSIPHUM. Koch.

This genus is evidently closely allied to *Aphis* and in a strictly natural arrangement should be placed in close proximity. Passerini, in his arrangement, places it between *Phorodon* and *Myzus*. That in

some respects is also allied to the latter genus is clearly indicated by the antennæ of some of its species. Buckton places it between *Megoura* and *Siphocoryne*, *Aphis* following the latter, which is, undoubtly a better arrangement.

It may be characterized as follows:

Beak of medium length. Antennæ usually as short or shorter than the body, but occasionally exceeding it in length; third joint longer than the fourth; seventh setaceous and sometimes longer than the third. Wings, and size and form of the body, as in *Aphis*. Honey-tubes usually of medium length, seldom extending beyond the tip of the abdomen, dilated in the middle or near the end, and sometimes slightly curved. Tail present and distinct but small.

Species with long antennæ generally have rather long and robust honey-tubes, and are distinguished from *Drepanosiphum* chiefly by the size of the tail.

Rhopalosiphum dianthi. Schr.

Found on carnation pink and German ivy by Miss Middleton, at Carbondale, Illinois, in March. Wingless only seen and these in balsam, but the characters together with the plants on which they were found are sufficient to determine the species. The characters so far as the color and the wings are concerned are taken from Koch.

Winged female.—Antennæ reaching to the tips of the honey-tubes, dark; head and thorax black; abdomen dark olive green, with dark transverse bands; honey-tubes extending slightly beyond the tip of the abdomen, slightly enlarged in the middle, dark or brown; tail small and concolorous with the abdomen.

Wingless female.—Antennæ as seen in the specimens examined, about as long as the body; the tubercle is distinctly enlarged and gibbous internally; third joint longest, this and remainder as usual in this genus. Body broadly ovate, the abdomen with the sides much rounded. Honey-tubes enlarged in the middle, same color as the abdomen; tail rather short and conical. Color as given by Koch, pale yellowish green with a darker green stripe in the middle and one on each side. Antennæ and legs pale.

Rhopalosiphum tulipæ. n. sp.

Winged individuals.—Antennæ longer than the body, reaching to or beyond the tips of the honey-tubes when extended; the tubercle on which they stand, with a slight internal enlargement; the first joint very thick, with a slight protuberance on the inner side; third and seventh joints long; usual type. Honey-tubes rather long, extending beyond the tip of the abdomen and nearly or quite to the tip of the tail; distinctly enlarged in the middle portion, smaller at the base and at the tips, presenting the usual form in this genus. Tail about half the length of the honey-tubes, sub-conical and curved upwards. Wings

of the usual form; second fork of the third vein rather nearer to the apex than to the third vein; thin, transparent, veins slender; the costal and sub-costal veins not parallel, the sub-costal rather robust, and slightly curving inwards about midway between the base and stigma. Stigma quite opaque, medium size, rather narrow, and acutely pointed at each end. Abdomen short, broad, and with broad margis. (The specimens are alcoholic, and this may have something to do with the appearance.)

Front of the head and base of the antennæ black; prothorax pale; disc of the mesothorax dark brown or black; the hinder part of the abdomen with two or three transverse dark brown stripes; veins of the wings and stigma brown; honey-tubes pale brown.

Wingless specimens.—As compared with the winged, large and elongate; honey-tubes very long and slender, not enlarged in the middle; reaching to the tip of the tail; tail very long, equal to one-fourth the length of the body exclusive of the tail. Form of the body elongate oval. Front of the head appears to be deeply grooved, resembling very much a *Siphonophora* and so different from the winged individuals as to cause one to doubt the two belonging to the same species.

Length of body of winged .08 inch; wingless to tip of the abdomen .09, to tip of the tail .12 inch.

Dr. Bundy, from whom the specimens were obtained, furnishes the following note in reference to them:

On *Tulipa gesneriana. Female.*—Abdomen, below pale uniform pea-green; above darker sea-green; darker transverse lines on the posterior half; honey-tubes black; a row of black spots on the sides; head and thorax dark, blackish green, with a suggestion of orange; prothorax pale below; antennæ and eyes black; legs generally dark, paler on the basal half of the femora. Wings dusky, with a steel-blue reflection on the outer half; basal half with a coppery reflection; a long, dull stripe on the margin of the forewings.

The dull stripe on the forewings is doubtless the broad sub-costal vein.

The only Aphis hitherto described from the tulip, of which I can find any notice, is *A. tulipæ.* Fonscol. France. The description is found in *Ann. Soc. Ent. Fr. x.* 167, which is inaccessible to me at present. It is possible, therefore the two may be identical, if so my specific name will remain good, and I think the generic position correct, but the name of the original describer will have to be attached as author.

It approaches *Myzus* in some respects.

Rhopalosiphum berberidis? Kalt.

Syn. *Aphis berberidis.* Fitch.

I have considerable doubts of the identity of Dr. Fitch's species with Kaltenbach's, but concluded to consider them as one, although I have seen no specimens.

Dr. Fitch's short discription is as follows:

"Black; the breast and abdomen pale yellow, tip black. Larva and pupa pale, with a green or black stripe on each side of the back parallel with the outer margin. Length .10 inch. Found on the under side of the leaves of the barberry."

Kaltenbach's species, as given by Koch, is as follows:

Winged viviparous female.—Antennæ reaching about to the base of the honey-tubes. Honey-tubes, extending to the tip of the abdomen, and considerably swollen in the middle. Tail minute. General color pale buff or yellow; antennæ pale at base, remainder dusky; eyes black.

Wingless female.—Antennæ short not reaching to the middle of the body, pale dull yellow; eyes black; legs and honey-tubes dull yellow; body pale rusty red. Size about the same as that given by Dr. Fitch.

Genus Hyalopterus. Koch.

This genus is closely allied in some respects to *Aphis*, and in others to *Callipterus*.

The antennæ are situated on tubercles which brings it into the section now under consideration, but in a strictly natural arrangemenit should fall below *Aphis* and between that genus and *Callipterus*.

The characters were very briefly and imperfectly given by the author of the genus, but from the species he included we may judge them to be as follows:

Antennæ seven-jointed, situated on frontal tubercles; third joint usually longest; seventh sectaceous, sometimes as long as the third and sometimes scarcely longer than the sixth. Beak quite short. Wings as in *Aphis*, but thin and delicate as in *Callipterus*, though not marked or clouded as in that genus. Body, especially of the winged individual rather small and similar in form to that of the typical species of *Aphis*. Honey-tubes short, reduced almost to tubercles; cylindrical; tail slender, short and inconspicuous. Prevailing colors pale green and greenish yellow, the apterous individuals seldom with black markings.

The relative length of the honey-tubes and the tail appear to me scarcely to justify Passerini's character of this genus given in his Synopsis, and which I have followed with great doubt, as I have not had an opportunity of examining specimens.

The following species, which belong to this genus will probably be found in this country:

Hyalopterus pruni. Fabr.

Syn. *Aphis pruni.* Fabr.

This species is distinct from the *Aphis pruni* of Koch which is elsewhere described. I can only add here that the winged individuals are rather small, the head and thorax dusky or black; abdomen very

pale green, antennæ and legs pale. Apterous individuals green, sides purplish or primrose; honey-tubes short not reaching half way to the tip of the abdomen, black; legs and antennæ pale or cinereous. Honey-tubes in the winged individuals little more than tubercles. Antennæ not longer than the body.

Hyalopterus aquilegæ. Koch.

Very similar to the preceding except that the general color is more of a greenish yellow. Will probably be found here on our *Aquilegiæ*.

Section aphidini.

This section agrees with the preceding in the following characters: The front wings have three discoidal veins, the third being twice forked; the hind wings are furnished with two oblique veins. The antennæ are seven-jointed, the third usually the longest, and the seventh setaceous and generally next in length to the third. The species differ from those of the previous section as follows: The antennæ, instead of being supported on tubercles, are inserted directly on the front of the head; they are generally shorter, seldom exceeding the body in length, and often, especially in the apterous individuals, being considerably shorter, extending but little beyond the middle of the abdomen. The size is also usually less, and the legs shorter. The honey-tubes are shorter, seldom reaching to the tip of the abdomen, in many cases tuberculiform, and sometimes obsolete. The tail is usually small and inconspicuous and occasionally wanting.

From the following sub-family it differs, in having third discoidal vein of the front wings always twice forked. It differs from *Lachnini*, in having the antennæ always seven-jointed, and the seventh joint longer than the sixth, at least it is never shorter.

The habits of the species are similar to those of *Siphonophorini*. They usually reside on the leaves, twigs or slender stems of plants, but affect woody plants, such as trees and shrubs, as well as the more succulent.

In this group, as in the preceding, all the species (possibly there may be one or two exceptions) acquire wings at some time, and the rare exceptions are those whose history is but imperfectly known, and which doubtless develop winged individuals at some time.

It is in this group that I think it most likely the dimorphism, of which I speak in the introductory portion of this paper, probably occurs to the greatest extent in this sub-family.

Genus SIPHOCORYNE. Pass.

This genus appears to differ from *Rhopalosiphum* only in the fact that the antennæ are not situated on tubercles as they are in that genus.

I give here the characters of one species as I find them in the works of European entomologists. I select a species which will probably be found here as it is found on the cultivated parsnip.

SIPPOCORYNE PASTINACÆ. Linn. (The Parsnip plant-louse).

Syn. *Aphis capreæ.* Fabr.
Siphocoryne capreæ. Pass.
Aphis pastinacæ. Linn.
Rhopalosiphum pastinacæ. Koch.

I have not detected this species, but there can be but little doubt of its existence in this country on the cultivated plants on which it is found.

The color is a delicate greenish yellow.

Winged viviparous female.- Antennæ about as long as the body; third joint longest. Honey-tubes rather large, and very distinctly enlarged in the middle portion near the tips; extending beyond the tip of the abdomen. Tail distinct but small and not more than one-third or one-fourth the length of the honey-tubes. Head, antennæ and thoracic lobes dark brown or black; remainder of the body, the legs and honey-tubes pale pea green or greenish-yellow. About or slightly above medium size.

Wingless female.—Pale green or yellowish throughout; a rather broad submarginal greenish stripe along each side.

Koch and Passerini consider *capreæ* as distinct.

The chief difference appears to be in the color, which is more uniformly green. The honey-tubes are also a trifle shorter, and the enlargement is thrown nearer to the tip. There may be some difference in the joints of the antennæ.

Infests the undersides of the leaves, and the tender stems of the common parsnip (*Pastinacea sativa*).

Genus APHIS. Linn.

This genus in its restricted sense includes only those species which have the antennæ of moderate length, usually shorter than the body and not placed on tubercles; similar in respective length of the joints, to *Siphonophora*, third and seventh longer than the others. The honey-tubes cylindrical, of moderate length, seldom reaching the tip of the abdomen, and always (or at least with few exceptions) longer than they are thick; body not hairy; legs of moderate length. Wings

of the usual form; front wings with three discoidal veins, the third twice forked; hind wings with two discoidal veins. The beak of moderate length. Usually found on leaves.

There are some species included in this genus of which I have seen no specimens, it is possible therefore that a few may be wrong—but I think there very few such cases. In each case where there is doubt mention will be made of the fact.

Aphis mali. Fabr. The Apple-tree Aphis.

This, as its name indicates, is the common plant-louse, which is so frequently met with on the tender twigs and leaves of the apple-tree. It is more than probable that two or three different species are often counfounded under this common name; but practically this is of but little importance as the habits of the closely allied species are generally very similar, and the remedies to be used against them the same; still it is well for the horticulturist to be able, if possible, to identify the different species which injure his trees.

Fig. 15,

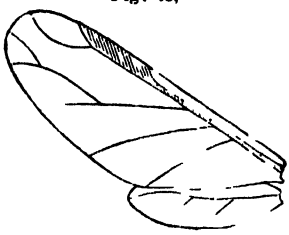
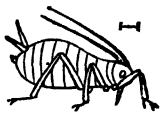


Fig 16



It is often quite difficult to determine whether the lice upon American plants are the same as the European species which occur on the same plants, as the descriptions by the early authors are very brief, and drawn up without proper examination and care; but a comparison of the Apple-louse of America with that of Europe, shows that they are identical, thereby making it evident that it has been imported into this country. But a change of locality has produced a slight change in the color, which for a time cast some doubt over this question. The following somewhat full description of this species will enable the reader to identify it with sufficient certainty.

The wingless females of the summer brood are somewhat less than one-tenth of an inch long, of a pale greenish color, with the head usually more yellow than the body. Stripes of a deeper green are usually present on the back: sometimes there is but a single middle stripe, with partial transverse ones at the joints of the segments. Eyes, black; beak, antennæ and legs, whitish with dusky tips; honey tubes as long as from their base to the tips of the abdomen, dull whitish, with black tips.

The winged males and females measure about one-eight of an inch to the tip of the closed wings; head and thorax black, the neck usually green, abdomen a bright grass green, with a row of black dots each side, one dot on each segment; on the under side of the abdomen, at the tip, are two square brown dots, and above, near the tip, often two or three dark transverse stripes. Antennæ black, scarcely as long as the body; the two basal joints short and thick, almost as broad as long; third joint the longest of all, the sixth only about half as long as

Note.—See No. II, figure 14 & The head and antennæ.

the fifth or seventh. Legs pale dull yellowish or whitish; feet, tips of the shanks, and of the thighs, dusky, the hind thighs blackish, except near the base. Wings transparent, but not perfectly pellucid; the stigma dull white.

Dr. Fitch mentions the following variations in color:

Antennæ, brownish yellow; neck not green, thorax dull green; abdomen, yellowish; abdomen without black dots.

The pupæ examined the past season from the extreme northwest part of the State presented the following characteristics:

General color pale transparent green, with three more or less distinct darker green lines along the back; the underside uniform bright apple green. Antennæ whitish except at the tips, about two-fifths the length of the body; honey tubes pale at the base, dusky at the tips, cylindrical, reaching nearly to the tip of the abdomen. Length about .08 of an inch. The very young are of a transparent whitish color throughout.

The thorax of the winged individuals sometimes has only the lobes black.

Aphis malifoliæ, Fitch. Apple-leaf Aphis.

This species, which was first described by Dr. Fitch, in 1856, has very probably, been often mistaken for the preceding on account of its similarity in habits. In fact, Walker, in the appendix to his catalogue, gives this name as a mere synonym of the former. It is possible, it is but a variety of the former; but I here follow Dr. Fitch, and give it as a distinct species.

It is larger than the *A. mali*, measuring rather over one-seventh of an inch to the tips of the closed wings; of a shining black color throughout; the legs are also entirely black, an occasional specimen being found in which these are pale brownish at the base. The wings differ very distinctly from those of the preceding species. They are more slender, and the fourth vein (of the front wings,) is relatively shorter and more strongly curved throughout its entire length. In consequence of this curvature, it is nearer the second fork at its base than at its tip. The third vein is but slightly aborative at its base. In the former species, the first fork branches from the third vein beyond its middle; in this species, it is given off much nearer the base, at about one-third the distance from the base to the tip; in the former species, the second branch or fork is much less than half as long as the first; in this species, it is usually half as long.

Dr. Fitch, from whose report the above description is chiefly taken, states that he gathered this species from the leaves of the apple trees in Mercer county, Illinois; two-thirds of all the specimens he gathered at the time belonging to this species.

I have noticed the same species in the southern portion of the State, and am inclined to think a close and careful examination of the Aphides infesting the leaves and twigs of our apple trees would possibly reveal the fact that this species is as common and as numerous as the *A. mali*, or, as Dr. Fitch believes, more numerous.

The name given implies that it is confined to the leaf, but this, I think, is a mistake; that this is the habit of the species, I think

quite probable, and corresponds with my observations, of which, unfortunately, I have no notes, but I certainly have noticed the winged specimens, and if I recollect rightly, apterous individuals also, on the tender twigs.

Aphis pruni, Koch. The Plum-tree Aphis.

A. prunifoliæ, Fitch. The Plum-leaf Aphis.

I am satisfied that our species, which Dr. Fitch has named *A. prunifoliæ* is the *A. pruni* of Koch, but not the *A. pruni* Fabricius, as Dr. Fitch rightly supposed, nor the *A. pruni* of Scopoli, which is probably identical with *A. humuli* of Schranck.

This is much like the apple-leaf plant-louse both in appearance and habits, except that it selects the plum tree as its food plant instead of the apple-tree. It is found on the underside of the leaves of our native and cultivated plums, wrinkling and destroying them. What is said in reference to the history of the apple plant louse will apply as a general rule, to this species, which does not appear to abound to the same extent as some of the species already named.

This species appears to be quite variable, but the following taken chiefly from the original description by the author of the species, will probably enable the reader to identify it.

The winged specimens measure about one seventh of an inch to the tip of the wings; the body is of a shining black color, except the abdomen, which is pale green with a black dot on each side of the two or three anterior segments; a large dusky spot rather behind the middle; tip of the abdomen acuminate; honey-tubes cylindrical, reaching to the tip of the abdomen. The legs are pale, dull yellowish; antennæ black, except at the base, where they are pale Wings pellucid; veins dusky, except the rib-vein. The venation does not appear to be as uniform as is usually the case in this genus.

The larvæ are more or less of a greenish white color, varying according to age. The wingless specimens are broadly oval in form; the average length about one-sixteenth of an inch.

Winged individual.—Antennæ about as long as the body dusky or black; head and thorax black, a greenish ring usually around the neck, and sometimes slightly powdered or pruinose; abdomen green with black dots on the lateral margins and usually a large black spot on the central portion reaching back to the honey-tubes, also two or three transverse black lines behind the honey-tubes; honey-tubes of moderate length reaching nearly to the tip of the abdomen, black; legs pale, dark at or near the joints.

Wingless female.—Antennæ scarcely as long as the body, basal joints dark, rest dull yellowish; head black; thorax and abdomen green, the former with two transverse dark lines, the latter with black marginal dots and a large black space on the central part; honey-tubes yellowish. Some specimens have the head greenish yellow and are without the large black spot on the abdomen. This sex has the body very broadly ovate.

This species appeared early in the season on one of my plum trees but soon disappeared; they were almost entirely black, this color prevailing to a larger extent than given by Koch.

Aphis rumicis, Linn. The bean aphis.

This is said to be one of the most injurious species of the entire group, not confining its attacks to a single plant, but spreading its colonies over a variety of species, on which account it has received a number of different specific names, which Mr. Walker has enumerated as follows: *A. rumicis*, Linn.; *A craccæ*, Linn.; *A. atriplicis*, Linn.; *A. fabæ*, Scop.; *A. genistæ*, Scop.; *A. acetosa*, Linn.; *A. aparines*, Fabr.; *A. euonymi*, Fabr.; *A. papaveris*, Fabr.; *A. hortensis*, Fabr.; *A. vicæ*, Fabr.; *A. chenopodii*, Schrank; *A. thlaspeas*, Schrank; *A. galliscabri*, Schon.; *A. armata*, Hans.; *A. laburni*, Kalt.; *A. dahliæ*, Mas.*

These names indicate the different plants on which it has been observed—as the dock (*Rumex*), the tufted vetch (*vicia cracca*), the garden orache (*Atriplex*), the bean (*Faba*), the dyers broom (*Genista*), the field sorrel (*Rumex acetosa*), the bedstraw (*Galium aparine*), the burning bush (*Euonymus*), the poppy (*Papaver*), the pigweed (*Chenopodium*), the shepherd's purse (*Capsella bursa-pastoris*), the dahlia (*Dahliæ*). They also show that not only is it not confined to a single species, or a single genus of plants, but feeds alike on those belonging even to different orders, thus setting at naught what is considered as an inflexible rule in regard to all other species. I think it more than probable the facts presented by this will ultimately lead to a more thorough examination of other species, and show that many which are now considered as distinct species are but varieties.

It may be asked, How is it known that these various supposed species are but varieties of but one species? By the peculiar marks and characteristics which distinguish it from all other species. Yet it it is possible that some of these are after all distinct, and that Koch is right in restoring them to their position as such.

Winged females glossy black, one-twelfth of an inch to the tip of the abdomen, and one-sixth of an inch to the tips of the closed wings; antennæ shorter than the body, (Dr. Fitch says half the length of the body, but this appears to be the minimum, as it is sometimes nearly as long as the body,) indistinctly seven-jointed, third longest, sixth shortest of all, except the first two. The ovipositor distinct; honey-tubes, short but distinct. Legs black tibiæ pale. Wings pellucid, veins slender and dusky, third vein abortive at the base.

The wingless females are also black; the abdomen frequently showing witish powdery dots along each side of the back. It is the pupa that presents the peculiar and marked character of the species. When this state is fully attained it equals in length the body of the winged individuals; is oval in shape, with the sides nearly parellel, the anterior end bluntly rounded and the end of the abdomen tapered to an obtusely attenuated point. The head varies in color, from black to dull green or olive, dusted over with white powder; thorax, with the anterior half, narrow, black and powdered; posterior half twice the width of the anterior part, dark greenish or olive color; the abdomen black, with white pruinose (or powdered) spots along each side of the back. The eggs, when first deposited, are greenish, but soon become black; are very minute, regularly oval, and not more than one fiftieth of an inch long.

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* Note.—Koch has removed several of these as distinct, and Walker has accepted the change in the supplement to his catalogue.

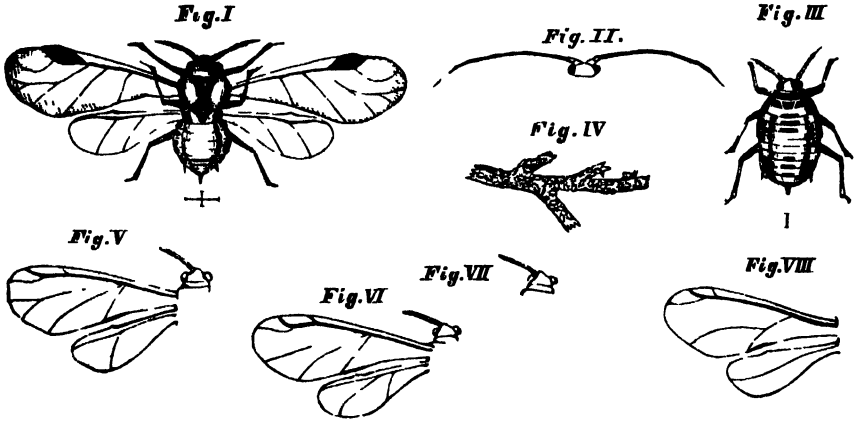
These insects usually select the center of the underside of the leaf as the point for locating colonies, which usually consist of but, comparatively, few individuals. Dr. Fitch thinks this species passes the winter in the perfect winged state, as well as in the egg state.

Aphis circæzandis. Fitch.

This is a species found on the leaves of *Galium circaezans*. Length about one-eight of an inch to the ends of the wings; head and thorax, black; wings pellucid.

I know nothing further in reference to this species as I have not seen it.

Fig. 14.



I. *Aphis maidis*—winged insect.
II. Head and antennæ of *Aphis mali*
III. *Aphis maidis*—wingless female
IV Portion of a corn root infested by *A. maidis*.
V *Glyphina ulmicola*
VI. *Pemphigus populicaulis*
VII. Should be omitted
VIII. Wings of Phylloxera

Aphis maidis, Fitch. The Maize or Corn Aphis.

This species, which appears to be different from the one infesting the Maize or Indian corn in Europe, was formerly supposed to confine its attacks to the stem or peduncle which bears the ear, the most vital point, so far as yield is concerned, of the entire plant; but Mr. Walsh afterwards found Aphides infesting the roots, which having reared to the perfect or winged state he was satisfied belonged to this species.

Fortunately I have had an opportunity during the past year of studying this species and of adding further evidence on this point and also some new facts in reference to its habits.

I give first the characters as presented by Fitch and Walsh, and also a description from specimens I obtained during the summer from a different part of the plant.

Dr. Fitch's description of those he found infesting the ear-stalks is in substance as follows:

The larvæ are either green or yellow; the latter being those which ultimately acquire wings; before changing into pupæ, they usually acquire a pale reddish color, and are dusted over with white powder.

The wingless females are dull blackish, tinged with green, and sprinkled with fine whitish powder; head and generally two bands on the thorax, black; the abdomen is usually marked with black spots along the sides; honey-tubes rather short; antennæ black, and not more than half as long as the body. Winged females, similar; length of the body, six-hundreths of an inch; general color, black; the abdomen dark greenish, with black dots along each side and three black bands at the tip.

Mr. Walsh describes those he found infesting the roots as having the general color, both of the pupa and perfect insect, pale green; the female pupa usually has three, short, transverse dark lines on the thorax, and three similar ones on the abdomen. It is figured in the fifth volume of the Transactions of the Illinois State Agricultural Society. (I. fig. 14.) The antennæ are unusually short, scarcely reaching the tip of the thorax; the honey-tubes are also rather short; the first discoidal vein is farther from the second than the second is from the third, and the stigma is prominent and pointed at each end. He states that the pupa is dusted over with a whitish bloom like that of a plum, and with dusky markings.

In the latter part of July I found an Aphis feeding on the tassels of corn, which upon examination I found to belong to this species; late in the season other specimens were sent me in alcohol, which had been gathered in May in large numbers on the roots of corn. These, although in the pupa and larva state, showed so clearly the marks and other characteristics mentioned by Mr Walsh, that there was no mistaking their identity.

It is therefore quite certain that this species is not confined to any one part of the plant, but infests the greater portion of it, at least its most vital parts, and when very abundant, as it is in some cases, does serious injury. The root variety appears to retain the pupa form for some time, and I think it more than probable that many of them never acquire complete wings, although the wing-cases are formed.

I add here a description of the specimens found on the tassels.

Wingless individuals. (III. fig. 14.)—The full grown are of an apple green color throughout except the front of the head, which is dark; honey-tubes short, cylindrical, not reaching quite half way to the tip of the abdomen, deep black with small black spots surrounding the base, body elliptical or slightly ovate in outline and of but moderate width; the very young have the sides nearly parallel; antennæ half scarcely the length of the body, dark brownish 7-jointed, third joint the longest, about equal in length to the fourth and fifth united, fourth, fifth and sixth nearly equal in length, seventh a little longer than the sixth; whole antennæ having a few scattering hairs. A stripe running along the margin at each side of the abdomen of a little darker shade than the central portion; legs dusky, darker at the joints and tips.

Winged individuals.—Head and thorax of a shining black; abdomen pale greenish-yellow, dotted along the lateral margin with black; honey-tubes black, similar to those of the wingless individuals; legs dusky, pale at the immediate base; antennæ about half the length of the body; beak very short, scarcely reaching beyond the base of the fore

legs. Wings erect in repose, of usual form, third discoidal vein twice forked, transparent; veins slender, slightly dusky, the stigma elongate fusiform and rather slender; the subcostal vein for some distance from the base recedes somewhat from the costal and then at about two-thirds the distance approaches the costa; the first vein about three times as far from the second, at the tip as it is at the base; the second is slightly farther from the base of the third than the base of the first. The second fork arises near the apex of the wing; the stigmatie vein curves somewhat sharply at the base, and then is nearly straight to the tip,

The following notes received in reference to this species in 1877 are appended.

E. Hall, Athens, Menard countv, July 16, 1877: "Plant lice on the roots of corn did considerable damage in 1874. Not perceptibly injurious since; and then confined to limited areas, on old lands."

E. R. Boardman, M. D., Elmira, Stark county, Nov. 27, 1877: "On the 19th of May, one of my neighbors came to get me to go and examine a field of corn that he said was being destroyed by something, and he could find nothing that could account for it. I found the corn about three inches high, and hundreds of hills withering and dying; and on careful examination I found the roots and base of the culm below the ground literally swarming with Aphides. I think from some hills I could have gathered a teaspoonful of the little creatures. I estimated about one-fifth of the stand of corn in that field to be then destroyed by them. There had been a crop of rye raised on the ground the season previous. I had before seen slight injury from Aphides, but nothing to compare with this."

The same, under date of December 5, in answer to some inquiries. "I find, on referring to my notes, the specimens sent were collected on the 22d day of May. The field was planted the 10th of May."

The same, under date of December 12. I had intimated in reply to one of his letters, that it was rather singular that they should appear there in such numbers when corn had not been raised on the field the previous season. He says:

"In regard to those Aphides, it appeared singular to me that they should exist in such numbers in that field, while in an adjoining field, separated only by a road, there were only a very few specimens found, and no injury sustained from them. This adjoining field had been cultivated in corn for several years; and the only way that I could account for it was, that the field where they were found had a hazel copse along one side of it, and that they may have come out of that, as they were worse on that side of the field."

Aphis brassicæ, Linn. The Cabbage plant-louse.

A careful examination of our species during the past summer, and a comparison with carefully colored figures of the European species, have satisfied me that the two are identical. It must have been introduced at an early day, as Dr. Fitch has shown conclusively that it was known in this country as early as 1791. It is the most common and, perhaps, the most injurious species known to the vegetable garden in this country.

As a general thing, it is not considered necessary to adopt any measures for its destruction, but occasionally it multiplies to such an extent as to inflict serious injury upon the cabbages and even to destroy them. But I am inclined to believe it often does more damage than it has credit for, as it not only congregates on the under side of the outer leaves, but also on the upper side of the inner leaves, and by drawing the juices from the latter prevents the formation of firm heads. It is well, therefore, to take measures for ridding the plants of them whenever they attack the inner leaves in numbers sufficient to affect their healthy and proper growth. The injury may not be observed at the time, but afterwards the gardener may find that notwithstanding their apparent healthy condition, they have failed to form firm, compact heads, upon which their value depends. These insects may be found from July to the close of the growing season. In a short time after their appearance, they can be observed in all their stages, from the larvæ to the perfect state, with here and there among them a winged individual.

The *wingless individuals*, which are usually located in clusters, are a little less than one-tenth of an inch long, ovate in form, and of a pale pea-green or greenish-yellow color; more or less covered with a fine pale bluish white powder; the antennæ are not quite as long as the body, of sometimes a pale dusky color, but in many specimens they are more or less whitish; legs usually of a dirty yellow or somewhat dusky; the abdomen is sometimes marked with dark dots along the sides; honey-tubes short, not extending half way to the tip of the abdomen, black; tail very short, usually pale.

Winged individuals about eight hundredths of an inch to the tip of the abdomen, fourteen hundredths to the tip of the wings. General color yellow or greenish-yellow; head, black; neck with whitish powdered ring; a narrow transverse dusky ridge on the proxthorax; the raised lobes of the thorax dark; abdomen pale yellow, sometimes with greenish tint, with a row of black dots along the margin each side, and sometimes with some dark crosslines; honey-tubes very short, black; eyes black; antennæ dusky, about as long as the body, third joint corrugated about equal in length to the fourth and fifth united, fourth and fifth about equal in length, sixth, slightly over half the length of the fifth, seventh nearly as long as the third; from the fourth to the tip the antennæ are much more slender than the third and basal joints; wings transparent slightly smoky with slender, dark veins, the second vein about equally distant from the first and the third, if any difference slightly nearer the third, first and second veins nearly straight, second fork about equally distant from the apex and the third vein, fourth vein regularly but very obtusely curved, stigma rather small, elongate, very pointed at the apex without any distinct angle, dusky; the discoidal veins are robust, dark-brown, very distinct; the costal and subcostal are usually paler.

Remedies.—Drenching with soap-suds only destroys the young, leaving the old ones to plant new colonies. Watering them with a mixture of tobacco water and lime water is strongly recommended, and is perhaps the best wash that can be applied. Suffocating them with tobacco smoke is decidedly the best remedy, that can be adopted. Dr. Fitch recommends driving short stakes into the ground and covering as many plants as possible with canvas, or old carpeting, so as to confine the smoke.

Drenching thoroughly with brine will also assist in destroying them.

APHIS CERASOFOLIÆ. Fitch.
Syn. *Myzus cerasifoliæ.* Thos.

As I have succeeded in obtaining specimens of what I am satisfied is this species, I can now complete the description. The original description by Dr. Fitch, is as follows:

"The cherry leaf plant-louse (*Aphis cerasofoliæ*) measures .08 (inch) to the tip of its abdomen, and .15 (inch) to the end of its wings, which expand .26. It is black with a pale green abdomen which has three dark green dots on each side forward of the nectaries, and above these a row of impressed deep green dots extending backwards, past the nectaries, with a deep green stripe upon the middle of the back which does not reach to the tip; the sutures are also of a deeper green color; the nectaries reach half way to the tip and are dusky, at least at their ends; the neck and lower side of the head are green; the antennæ are two-thirds the length of the body, dusky, and in young individuals, green at their basis; the short tail, pale green, its apex blackish; the legs are dull white, the feet and four hind thighs, except at their base, blackish; the wings are pellucid, the stigma salt white margined with dusky, more widely so on its inner margin, the veins black, the rib-vein white, the second fork very short.

The *Wingless females* are .08 long, egg-shaped, pale yellowish green, their abdomens coated with a white meal-like powder except at the sutures and on the medial lines, which last is deeper green, and the legs and antennæ dull white.

The *larvæ*, when young, are pea green with white antennæ, nectaries and legs. When older a deeper green stripe appears along the middle of the back, and a row of deeper green dots each side which are more or less confluent into stripes."

From specimens sent me by Prof. Bundy in alcohol, I take the following characters:

Winged Specimen.—Antennæ not as long as the body, reaching about to the base of the honey-tubes; third and seventh joints about the same length as the fourth, about three-fourths the length of third; fifth a little shorter than the fourth; sixth rather less than half the length of the fifth.

Wings transparent and delicate, veins very slender; stigma rather small, long, narrow and pointed at the ends; second fork of the third vein, much nearer to the apex of the wing, than to the third vein; fourth vein curving regularly to the apex. Beak short, reaching midway between the first and second pairs of legs. Honey-tubes not reaching to the tip of the abdomen, cylindrical. Tail sender, not more than half the length of the honey-tubes.

Prof. Bundy's note accompanying the specimens is as follows:

On *Prunus virginiana* (choke cherry), June, Sauk City, Wisconsin.

"*Female.* Abdomen dirty green, transversely barred about with darker; head and thorax dark green nearly black; eyes black; wings pale yellowish at base."

I am now well satisfied that this species of Dr. Fitch is genuine and distinct from *A. cerasi* of Fabricius. The latter as I have stated

in "*Bulletin No. 2. State Laboratory National History*," belongs to *Myzus*, while the species here described, is certainly a true *Aphis* in the restricted sense.

APHIS APOCYNI. Koch.

Although there may be some slight differences between the plant-lice found on *Apocynum* or dogsbane in this country and those found on the same genus of plants in Europe, yet these differences are so small and the points of agreement so marked that I am forced to consider the two as identical. As described and figured by Koch, the European insect is as follows:

Winged specimens.—Antennæ scarcely reaching to the base of the honey-tubes, body rather slender, form and appearance as well as color very similar to the winged specimens of *Aphis mali* or apple plant-louse. The three branch or discoidal veins of the fore wings very nearly straight; second fork of the third vein a little nearer the apex of the wing than it is to the third vein; stigma long, rather slender, acutely pointed at the tip. Honey-tubes rather short, not quite reaching the tip of the abdomen; tail distinct about half the length of the honey-tubes.

Antennæ more or less dusky; eyes brown; head and thorax black; abdomen grass-green, with some fuscous shadings in front of the honey-tubes and some darker transverse stripes behind them; honey tubes black, tail dark green; wings transparent, with brown veins; legs pale yellowish except the tips of the femora and of the tibiæ, and the tarsi which are dusky.

Wingless individuals,—Regularly ovate, and much broader than the winged ones, antennæ shorter, general color dark green which prevails over the body except the head, two transverse thoracic lines, and two or three transverse lines near the tip of the abdomen, which are black; honey-tubes and tail black. Length of body about .10 inch.

The specimens which I have examined, which were found by Dr. Bundy at Sauk City, Wisconsin, on dogsbane (*Apocynum cinnabinum*), present the following characters, as shown by the alcholic specimens and notes of Dr. Bundy.

Winged specimens.—Wings transparent, veins small, the branch veins usually straight, the first and second without a bend or curve; second fork of the third vein nearer the tip of the wing than it is to the third vein; stigma rather long and sharp pointed. Honey-tubes reaching about to the tip of the abdomen, but not to the tip of the tail, rather robust. Tail about three fourths the length of the honey-tubes. Antennæ rather short not reaching quite to the base of the honey-tubes.

Wingless specimens.—Rather oval in form and broader than the winged.

The accompanying note from Dr. Bundy is as follows:

"On *Apocynum cinnabinum;* June, Sauk City, Wis. Female—abdomen dirty green, tipped with black, a few black spots above and below on the medium line posteriorly; honey-tubes black; thorax black except prothorax which is dull greenish-brown, with a narrow, transverse dorsal stripe which is black; head, eyes and antennæ black;

tarsi, joints of the legs, and the posterior two-thirds of the femora black, rest of the legs pale-greenish. Wings pale neutral tint, lighter at the base."

He does not state on what part of the plant it feeds; according to Koch, it is found on the flower stalks and even in the flower itself.

APHIS NERII? Fonscol.

Found on Oleander and other closely allied house plants.

Winged individuals.—Antennae varying somewhat in length but usually not extending quite to the tip of the abdomen; there is apparently a slight tubercle at the base indicating an approximation to *Siphonophora;* third joint but slightly longer than the fourth; fifth about two-thirds the length of the fourth and twice the length of the sixth; seventh longest, about equal to the third and sixth united; an occasional, little spine-like hair can be seen along the sides with a strong power. The second fork of the discoidal vein is nearer to the apex than to the third vein; costal and sub-costal veins nearly paralell. Tail short, rather broad, somewhat clavate and about one-third the length of the honey-tubes.

General color a pretty and bright saffron yellow; head smoky yel low; eyes black or dark brown; neck or prothorax yellow, thorax or thoracic lobes dark brown; abdomen bright yellow; honey-tubes black or dark, the base usually surrounded by a paler or whitish ring; a small dark spot on the abdomen behind the honey-tubes, and occasionally the dorsal portion sparsley sprinkled with black dots. Legs yellow, tips of the femora, the knees. and tarsi dark. Anterior wings somewhat smoky, veins somewhat slender and dark; beak pale yellowish, tipped with black. Antennae dark or blackish; tail dark brown.

Length of body .07 inch; to the tip of the wings .12 inch.

Wingless individuals.—Yellow throughout except as follows: front of the head dusky; antennæ, legs, honey-tubes and tail dark, as in the winged; the beak dusky at the tip. Antennæ not reaching beyond the base of the honey-tubes. The beak reaches to the base of the second pair of legs, in both winged and apterous. Body broadly ovate. Length of body .08 to .10 inch.

It is quite probable that the only winged specimen examined is a male, which will account for its small size. Although the lice were numerous, only one winged one was obtained when there was an opportunity for examining them.

Found on the tender branches and petioles of the oleander (*Nerium oleander*) and other closely allied plants.

I think it quite probable that this is identical with *Aphis nerii*, Fonscol, but as I have no description of that species, I have placed a mark of doubt after the scientific name.

APHIS DIOSPYRI. n. sp.

A small Aphis found on the persimmon, at Carbondale, Illinois.

Winged specimen.—Antennæ not on a tubercle, scarcely as long as the body, reaching about to the base of the honey-tubes; third and seventh joints about the same length: fourth a little shorter than the third and very slightly longer than the fifth; sixth about or slightly more than half the length length of the fifth; more or less corrugated throughout. Wings transparent, veins distinct; first and second discoidal veins nearly straight; third obsolete at the base; second fork not quite half the distance from the apex of the wing that it is from the third vein; fourth vein somewhat sharply curved near its base, but curving more gradually as it approaches the apex of the wing; stigma semi-opaque, long narrow and very acutely pointed at each end; the posterior angle, where the fourth vein arises, very obtuse. Honey-tubes of moderate length, reaching about to the tip of the abdomen, cylindrical. Tail distinct but very short, not more than one-fourth or one-third the length of the honey-tubes. Head and thorax dark; abdomen pale brownish, posterior extremity black or blackish; wings clear, veins dark, the subcostal vein, which is very robust is brownish and rather paler than the others; tail black. The color of the honey-tubes was omitted at the time notes were taken from the fresh specimens but judging from mounted and alcoholic specimens before me, I presume they are dark, as they are in the wingless. Length of body .06 inch, to tip of the wings .12 inch.

Pupa.—At the time the species was discovered quite a large proportion of those observed were pupæ. These are oblong-oval in form, and otherwise similar in color, and appearance to the wingless specimens.

Wingless specimens.—Ovoid in form, flattened above, with a depressed line near the sides forming a flattened somewhat alate margin; transversely wrinkled; more or less covered with a cottony substance; general color purplish brown.

They impart a reddish stain to the alcohol in which they are immersed.

Found on the leaves of the persimmon (*Diospyros virginiana*), chiefly on the underside. Carbondale, Illinois, in June.

Aphis viburni. Scop. (Fab.) The Snowball Aphis.

This species is found according to Dr. Fitch on the fruit stems of the high cranberry (*Viburnum opulus var Americanum.*) I find it on the twigs, especially the new growth and along the mid-rib and petiole of the leaves of the snow-ball (*V. opulus* var *rosum*); Koch also speaks of its infesting the leaves.

Winged female.—Antennæ reaching nearly to the honey-tubes, dusky; entire body, including head and thorax, black or very dark-brown; with sometimes times paler transverse lines on the abdomen; legs yellow except the posterior and middle thighs and ends of the tibiæ.

Honey-tubes reaching nearly to the tip of the abdomen; tail short but distinct. Length of body about .09 of an inch.

Wingless female.—Antennæ not more than half the length of the body, pale at base, dusky towards the tips. The form of the body is broadly oval, very convex sometimes appearing almost spherical. The general color is a lilac-brown, sometimes almost black, varying in depth of color in different parts of the body and also in different in-

dividuals; usually the head is somewhat paler than the thorax which is more or less tinged with olive; the central portions of the abdomen paler than the sides which are dark brown; tip of the abdomen, and a space around the base of the honey-tubes black or blackish. Legs mostly transparent yellow. Beak of medium length, scarcely reaching the hind coxæ.

Found at Carbondale in June and July.

Aphis vernoniæ Thos. The Ironweed Aphis.

This pretty Aphis is very abundant during the summer on the underside of the leaves of the ironweed (*Vernonia fasciculata*), causing them to curl downwards and inwards at the sides; it also moves on to the tender stem when abundant, and later in the season is found chiefly on the pedicels, or flower stalks, giving to the heads a blackened, sooty appearance, causing the flowers to fade and the head ultimately to wither and die. It is sometimes so abundant that its effect may be observed, over a large area thickly covered by this weed, at a glance.

I found it at Carbondale from June to August, and at Fort Dodge, Iowa, about 1st September; at the latter place it was, at the date mentioned, confined wholly to the heads. A pretty, bright, lemon-yellow species.

Winged individuals (probably females).—Length of body about .06 to .08 of an inch; to tips of wings .12 of an inch. General color bright yellow; abdomen bright lemon-yellow; thorax yellow, except the raised lobes, which, with the insertions of the front wings, are more or less dusky or brownish, in some specimens quite dark, in others pale. Antennæ about two-thirds the length of the body; honey-tubes slender, cylindrical, and reaching nearly to the tip of the abdomen; tail distinct, but short and blunt. The antennæ and honey-tubes are generally pale, the latter are sometimes ochreous, the tail yellowish or whitish; legs pale. The wings typical in venation, transparent, with a slightly smoky appearance; veins dark; a few specimens of the many examined had the wings clear, but as a rule the fuliginous or smoky appearance is very distinct; the second fork of the third discoidal vein is very near the tip and is very short.

Wingless individuals.—Almost uniformly greenish-yellow; eyes black; honey-tubes ochreous; tail whitish.

Sometimes the head, thorax, honey-tubes and tail of the winged specimens are darker than represented.

This appears to be very closely related to and probably identical with *A. beccabungæ*, Koch, which infests a species of *Veronica* in Europe; but I have concluded it best to consider it as distinct until identity has been established by better evidence than I have at present.

Aphis cephalanthi. Thos. The Button-bush Aphis.

This species is found on the stem or twig of the present year's growth, and sparsely along the mid-rib of the leaf near the base; and usually,

I believe, on the upper side. I am not positive in reference to this last point as my notes taken at the time omit to mention which side of the leaf they occupy, but my recollection is quite distinct as to its being the upper side. The young appear to be confined to the stem. I found them only on very young bushes but a foot or so in heigth; in the middle of July (15th to 20th).

Wingless individuals—Of a nearly uniform purplish color, the young quite pale, the older and mature individuals darker but more or less translucent, with a slightly pruinose coating. Head and tip of the abdomen dusky; a slightly impressed line along each side of the abdomen near the margin. Honey-tubes cylindrical, reaching about to the tip of the abdomen; tail distinct; beak reaching slightly beyond the middle coxæ. Form regularly ovate; length about .05 of an inch. Eyes black. Some specimens have the front and tip either pale or about the same color as the abdomen When crushed they give a reddish or dull orange color.

Winged individual.—(probably female). Head and thorax black; abdomen pale purplish, marked along the margin with pruinose or powdered spots, two similar spots also on the base of the abdomen immediately behind the thorax; tip of the abdomen dusky; there are about four of the lateral pruinose spots anterior to the honey-tubes on each side, and two behind them. Antennæ very slender, reaching only to about the middle of the abdomen, dusky. Legs pale except the knees, tips of the tibiæ and the tarsi, which are dusky. Wings of the usual form and venation, transparent with a slightly smoky shade when seen in their usual erect position in the living insect; the stigma pointed at the tip; fourth vein regularly curved; third vein obsolete at the immediate base; veins dark except the sub-costal, which is pale. Length of body about .06 inch; to tip of the wings, .09 of an inch.

Aphis impatientis. Thos. The Touch-me-not Aphis

This species was found at Carbondale, Illinois, in August, infesting the wild touch-me-not (*Impatiens fulva.*) I know very little in reference to its habits.

Winged individuals. Antennæ nearly as long as the body, reaching about to the base of the honey-tubes; pale and dusky alternately; third joint pale at base, rest dark; fourth pale except at the immediate tip; basal half of the fifth pale, dark from thence to the tip of the last joint. Head black; prothorax pale brown, rest of the thorax shining black; abdomen pale brown; honey-tubes of medium length, black; tail rather short, dull yellowish. Veins of the wings brown; stigma rather large, opaque and pale brown; iridescent. Tibiæ pale yellow.

Length of body .10 of an inch; to the tips of the wings .18 of an inch.

Wingless specimens, purplish-brown. Pupæ pale brown; thorax dull yellow; wing-cases whitish; legs and antennæ pale, transparent; broadly oval in form.

This species belongs to *Aphis* in the restricted sense.

Aphis symphoricarpi. Thos. The Snow-berry Aphis.

Found on the leaves of the Snow-berry (*Symphoricarpus vulgaris*) at Ft. Dodge, Iowa, September 1st. It inhabits the underside of the terminal leaves, causing them to curl, wither and die.

Wingless individuals (no winged specimens observed.)

There appear to be two varieties, or possibly the differences are sexual. The one pale transparent green, or yellowish green, eyes black, and a black ring around the antennæ beyond the middle, and the tips dusky; the honey tubes, and a small space around the base of each, ocher-yellow; tarsi, and tip of the beak, black; legs pale transparent green; bodies broadly ovoid and very convex; abdomen very distinctly acuminate at the apex, but no tail apparent.

The other variety is rather less convex, and the dorsal surface is more or less shaded with brown; in the darker specimens this color sometimes occupies most of the back; there is usually a median line or stripe of green on the posterior half of the abdomen, which can often be indistinctly traced to the thorax; the thorax generally more or less shaded with pale brown; tip of the abdomen usually pale or greenish, and not acuminate as in the other variety; tail distinct but short, whitish; honey-tubes dark at the tips; remainder, and a space around the base, yellowish-brown.

Legs rather short. Antennæ reaching to the honey-tubes, or nearly to the tip of the abdomen; honey-tubes very short, almost reduced to tubercles, length about twice their diameter.

Aphis middletonii. Sp. nov

This species, which is found in abundance during autumn and winter, on the roots of iron-weed, aster, and perhaps other plants, and which was discovered by me last November, is somewhat anomalous. And, although it is exactly what I have imagined for some time I would find, yet it appears no less anomalous when it is found. I cannot designate, with any certainty, the plant it chiefly infests, and hence am liable to lead astray by using a name indicating a particular plant or genus of plants. I have, therefore, named it in honor of Mise Nettie Middleton, who has been my constant assistant in the study of the Aphides, and to whose care and skill I am indebted for all the mounted and otherwise prepared specimens; who also has done a very large share of the microscopic work, and has assisted in describing and verifying a large portion of the speeies mentioned.

Wingless female, (no winged specimens observed).—General color of the body a leaden gray, with very little variation; antennae a little lighter than the body, with the tip of the fifth and whole of the sixth joint dark; legs the same color as the body, with the knees and tarsi dark; honey-tubes darker than the body, though having a leaden hue; tail the same color as the body; eyes black; beak with a brownish shade, tipped with black. This appears to describe the typical individuals, which seem to be fully developed; but the shading varies from this almost to white, and if the ones hereafter mentioned belong to the same species, then to white.

Antennæ seven-jointed, distinctly and unquestionably about half the length of the body; first joint very large and about twice the length of the second; third longest, but not as long as the following two taken together; fourth, fifth and sixth nearly equal in length; the sixth perhaps a little the shortest; seventh distinctly longer than the sixth but shorter than the third, being about or very little more than half the length of the latter. Honey-tubes rather short, cylindrical, reaching less than half the distance to the tip of the tail; tail quite short, conical and hairy; beak reaching to the third pair of legs; legs hairy. Form of the body elongate-oval, very convex. Length about .07 inch. With these were found others which correspond almost exactly with that described as *Tychea erigeronensis*, found by Professor Burrill on the roots of Endive and *Erigeron canadensis*, as to color, number of joints in the antennæ etc. That I now really believe, is but the larval form of this species, but have allowed the two to stand as distinct until the question as to identity, can be determined by further investigation.

That the species here described is a true *Aphis* can scarcely be doubted, as all the essential characteristics conform to that genus as restricted by Passerini. If this be so, then it is more than probable that this is but a dimorphic form assumed to adapt it to its subterranean mode of life and thus enable it to pass the winter. What it is in the winged state is as yet wholly a matter of conjecture, but that it is an *Aphis* inhabiting some composite plant is very probable. I am trying to rear it and if successful may be able to determine the question.

Aphis carduella. Walsh.

"Tips of young thistle-shoots. Blackish. Antennæ with joint six short, somewhat obtrigonate; joint seven as long as five and six put together. Honey-tubes as long as the tarsi. Legs rather short, pale greenish; knees, tips of tibiæ and tarsi dusky. Wings hyaline, with the tips of the front wings slightly fumose; veins brown, yellowish on the costa, the third discoidal hyaline at its origin; stigma pale, dusky brown. Length to tip of the wings 0 9—.10 inch."

"On *Cirsium altissimum*, and an undetermined species same genus. Antennæ attain the origin of the second discoidal vein when the wings are expanded, and the stigma is rather more than twice as long as wide and hunched on the exterior margin." (Walsh).

Aphis sambuci. Linn. The Elder Aphis.

Syn. *A. sambucifoliæ?* Fitch.

I think it more than probable that Dr. Fitch's species is identical with or but a variety of Linnaeus's species, and therefore give them as one here. The European insect is nearly black, a tinge of dark

green, showing on the abdomen. In the winged female the antennæ are about as long as the body, slightly shorter in the apterous individuals; seventh joint very slender and longer than the third. Honey-tubes long for this genus, extending beyond the tip of the abdomen. Legs somewhat hairy; thighs and tibiæ pale at base, black at the tips. Antennæ and honey-tubes black. Size, rather large; length of body .10 to .12 inch.

Dr. Fitch discribes his species very briefly as follows: "Black; tibiæ and base of femora pallid; stigma, dusky; nerves black, the furcate one hyaline at its base. Length .15. On the underside of the leaves of the elder. Male."

The measurement doubtless means to the tips of the folded wings. It is also more than probable the specimen described was a viviparous winged female.

I have not been fortunate enough to find this or either of the two following species, and hence can not decide with certainty as to their proper position.

Aphis cornifoliæ. Fitch. The Dogwood-leaf Aphis.

It inhabits the underside of the leaves of the Dogwood (*Cornus paniculata*).

The apterous females are black, somewhat powdered or mealy, and obovate in form: legs pale yellow, feet black; antennae pale yellow, with the tips black; honey-tubes reaching nearly to the tip of the truncated abdomen. Length, .05 of an inch to the tip of the abdomen. (Fitch.)

This is evidently different from the *A. corni* of Fabricius which belongs to another sub-family.

Aphis cratægifoli. Fitch. The Thorn-leaf Aphis.

Found on the leaves of the Thorn (*Cratægus punctata*) which it corrugates. Black; abdomen, with a row of blackish dots along each side; veins of the forewings whitish, black at their tips; tibiæ or shanks, except at their tips, and base of the thighs, green; honey-tubes, equaling nearly half the distance to the tip of the abdomen. Length, .15 of an inch. (Fitch.)

The length given here by Dr. Fitch I am satisfied is to be understood as to the tips of the closed wings.

This species is certainly different from *A. cratægi* of Kaltenbach, or the *A. pyri* Fonscol. with which it is supposed to be identical; it agrees with *A. cratægi*, Koch in the length of the honey-tubes, but in nothing else. I think therefore that it is a distinct and true species.

Aphis medicaginis. Koch.

As I am informed by Mr. J. Monell, of St. Louis, that he has found this species on *Leguminosæ*, I insert it here, with a brief description from Koch, as I have not seen it.

Winged viviparous female.—Size, small. Antennæ scarcely reaching to the base of the honey-tubes. Honey-tubes not attaining the tip of the abdomen; tail rather prominent. Body black throughout; antennæ pale, dusky at the tips.

Wingless female.—Rather broadly ovate; antennæ not more than half the length of the body. Color as in the winged female; tail in both black.

Aphis amygdali. Blanch. The Almond Aphis.

I know nothing personally in reference to this species. I find it stated that it is much smaller than *Myzus persicae*, is found attached to the underside of the leaves of the almond and peach trees, causing them to crisp and wrinkle.

The body is green; antennæ brownish; the legs are green except the tips of the thighs and tibiæ, which are yellowish; wings pellucid and very long, veins pale yellow or greenish.

Aphis populifoliæ Fitch. The Poplar-leaf Aphis.

Inhabits the underside of the leaves of *Populus granidentata.* Of a chestnut brown color, mealy; legs hairy, black, pale brown above the knees; veins of the fore-wings brown, stigma smoky yellow, margined with black; back with two rows of impressed, squarish fuscous spots; on each side, two rows of impressed dots; honey-tubes equaling a third of the distance to the tip. Length to tips of wings 0.22 inch.

Aphis pinicolens. Fitch. The Pine inhabiting Aphis.

Found solitary on the Pine. Straw yellow, densely covered with white powder; antennæ black, bases pale, with a dusky ring; fore-wings with a fuscous spot on the tip of each vein; veins brown, hyaline at their bases, the costal one straw yellow; honey-tubes very short. Length to tips of wings 0.25 inch.

This probably belongs to another genus, but I am unable to place it from the short description given by Dr. Fitch; such is also the case with reference to the preceding species which possibly belongs to *Chaitophorus*, and may be identical with my *Ch. populicula.* I give

them as I find them with the hope that some one into whose hands this report falls may be able to settle this point satisfactorily by finding the species.

GENUS CHAITOPHORUS. Koch.

This genus is distinguished by the following characteristics:

Front wings with three discoidal veins, the third twice forked; the posterior wings with two branch veins. Antennæ seven-jointed, not on tubercles, of medium length, usually a little shorter than the body, pilose or hairy; the seventh joint setaceous and longer than the sixth. Honey-tubes tuberculiform or obsolete. Beak of moderate length. Body usually hairy, and sometimes roughened by small tubercles.

CHAITOPHORUS NEGUNDINIS. Thos.

Winged Individual (in glycerine).—Wings very thin and delicate, and veins very slender; the costal vein bends outward from the base to the insertion of the second discoidal vein; the stigmatic vein starts from the stigma far back near the middle, curves slightly and gradually for a short distance and is then almost straight to the apex of the wing; stigma very long and slender; veins and stigma pale yellowish. Antennæ nearly as long as the body, sparsely covered with long stiff hairs. Honey-tubes short. Apparently greenish.

Found at Peoria, Illinois, in June, by Miss Smith, on *Negundo aceroides* (box elder).

CHAITOPHORUS POPULICOLA, Thos.

Winged specimens. Antennæ not very long, somewhat hairy. Wings transparent, but along each discoidal vein there is a broad smoky border; stigma dark; when examined by a strong power the wings appear to be covered with scales; when examined by an ordinary pocket lense they present a very pretty appearance, as though

marked by dark cross bands. Head and thorax shining black; neck dull yellowish; abdomen yellowish, with some irregular dusky patches toward the tip. Antennæ, which reach about the middle of the abdomen, dusky, the basal half paler; legs dark, the bases of the femora pale; beak short, reaching only to the middle coxæ.

Apterous female. Reddish-brown, or tortoise-shell color; a large, yellowish, triangular or Y-shaped spot, (the forks pointing backward) on the middle part of the abdomen; honey-tubes reduced to simple tubercles, yellow. There is often a palish stripe along the middle of the head and thorax. Antennæ pale yellowish at the base. Length about .05 of an inch.

Body more or less hairy; and although my notes, made at the time, fail to mention the fact, I think that some, at least, of the apterous specimens were covered with tubercles.

Found in July, at Carbondale, Illinois, and the first part of September, at Dubuque, Iowa, on the under sides of the leaves of young sprouts of *Populus angulata* (cottonwood).

Chaitophorus lonicera. Monell (Mss.)

This and the two following species were discovered and named by Mr. J. Monell, of St. Louis,* to whom I am indebted for a specimen of this species and the brief characters given of the other two. He also included another species which I have referred to *Callipterus* as I am satisfied it belongs there.

The characters given in Mr. Monell's brief notes are as follows: "Wings hyaline; honey-tubes almost on a level with the abdomen, detected with difficulty; abdomen pulverulent with short tubercles on the edge."

From the dried specimen with which he favored me, I make out the following characters:

Winged female. Wings as usual in this genus; third vein obsolete at the immediate base; second fork rather nearer to the apex than to the third vein; fourth or stigmatic vein curved at the base but the apical half is nearly straight; veins very delicate; wings also very delicate, but slightly smoky. Antennæ longer than the body; third joint long and pustulated; seventh nearly or quite as long as the third. Honey-tubes reduced to mere tubercles. Beak reaching to the third pair of legs. Body greenish.

This is certainly different from *Rhopalosiphum lonicera*, Siebold—which has the honey-tubes distinctly enlarged in the middle, and reaching nearly to the tip of the abdomen.

On the honey-suckle (*Lonicera.*)

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*Note.—This and other species named by Mr. Monell are noticed in the appendix.

CHAITOPHORUS VIMINALIS. Monell.*

Wings hyaline: honey-tubes distinct. Not pulverulent. Seventh joint of the antennæ long. General color of the winged specimens dusky, with the margins of the abdomen yellow.

Found on the willow.

CHAITOPHORUS SALICICOLA. Monell.*

Wings hyaline; honey-tubes distinct, fusiform; not pulverulent. Seventh joint of the antennæ short. General color red.

I give this on Mr. Monell's authority but I would not be surprised if it proves to be but a variety of Uhler's *Lachnus salicicola* which is hereafter described.

CHAITOPHORUS CANDICANS (?). The Balm of Gilead Plant-louse.

Infests the base of the leaves of the Balm of Gilead, and appears to be different from the *A. populi*, of Linnæus. But in order that this may be determined, I give here briefly, the characters of the latter, which has been transferred by Koch to his genus *Chaitophorus*.

The rib vein hardly approaching the front border, and then very slightly diverging from it; its angle very blunt and scarcely perceptible; the first discoidal vein very oblique to the rib vein, from its source to the base of the wing is less than three-fourths the distance from its tip to the base of the wing; second vein more oblique than the first, more than three times as far from the first at the tips as at the base; the third vein obsolete at the base.

The position of the rib vein, the obliquity of the discoidal veins, and the absoleteness of the third at the base, together with a slight difference in habits, are doubtless the reasons why this has been removed to another genus.

GENUS MYZOCALLIS. Pass.

This genus which was evidently formed by Passerini to include some osculent species pertaking of the characters both of *Chaitophorus* and

* NOTE—See Appendix.

Callipterus has really no characters. But as I have elsewhere stated the present restricted genera of the Aphides are largely artificial and must remain so until the life history of the species is better known. I use the genus here in a slightly different and more districted sense than its author, who brings together here *Aphis coryli*. Kalt and *Chaitophorous ononedis*. Kalt. The former which he gives as the type I take as a guide; the latter is evidently a species of *Chaitophorus*. His *Pterocallis* is dispensed with and the species which would be placed in it are referred to *Callipterus*.

The characters may be given as follows: Front wings with the third discoidal vein twice forked; posterior wings with two discoidal veins; antennæ not on a tubercle, smooth, seventh joint longer than the sixth; honey-tubes tuberculiform or sub-obsolete.

Very closely related to *Callipterus*, and from which it is chiefly separated by the comparative length of the sixth and seventh joints of the antennæ.

It would probably be as well or perhaps better to refer the species of this genus to *Callipterus*.

Myzocallis bella. Walsh.

Syn. *Myzocallis guercicola*. Thos. *Mss.*
Apthis bella. Walsh.

The following species of plant-louse is described from specimens found by Prof. Bundy in Wisconsin, and by myself in Illinois. It is possible the two are not identical, but as they appear to be, I describe them as such, giving the description of both, that the reader may be able to determine for himself.

Specimens from Prof. Bundy:

Winged individuals. (Alcoholic and somewhat imperfect).—Body somewhat fusiform in outline, honey-tubes very short, the length but little more than the diameter; slightly swollen at the base. Antennae wanting in all the winged specimens. Wings, with third discoidal vein of the front pair, twice forked; posterior pair with two branch or discoidal veins. In the anterior pair the first vein is about twice the distance from the second that the second is from the third, and curves regularly though slightly inward as it approaches the margin of the wing; second vein very distinctly sinuate; third vein slightly sinuate also. Second fork of the third vein about equally distant from the apex and from the third vein. The fourth, or stigmatic vein curves sharply the first half of its length, and then runs straight to the margin, but diverging somewhat rapidly from the fork of the third vein. Stigma acutely pointed at the apex, very obtusely angled posteriorly at the point where the fourth vein arises.

General color of those specimens which have been immersed for a long time in alcohol, pale, dull yellow; the abdomen shows some partial, transverse, dark stripes on each side. Wings very thin, transparent, the veins dark brown, slightly margined with brown, which expands at the points where they reach the margin, giving the wing a very pretty appearance when seen through an ordinary pocket mag-

nifier. The stigma is semi-transparent and pale in the middle, but is crossed obliquely at each end by a brown band: The costal and subcostal veins dark brown and remarkably parallel from the base to the stigma. In another specimen the brown bordering to the veins is almost obliterated.

Pupa?—Antennæ seven-jointed, if on a tubercle this is not very apparent, but appears to be indicated in some specimens; third joint nearly as long as the fourth and fifth united; fifth a little shorter than the fourth; sixth a little over half the length of the fifth; seventh about as long as the fourth, cylindrical but not tapering; in the alcoholic specimens pale with dark wings at the joints. The two basal joints of the antennæ have a strong spiny hair on the inner margin, the front of the head bears a few similar hairs; the body, especially the abdomen, more or less hairy, these hairs being more or less capitate.

Honey-tubes short, the length scarcely equaling the diameter. The body fusiform, abdomen rather small and tapering. Alcoholic specimen pale yellow; eyes red.

It is barely possible that the specimen here described as a pupa is in fact, a wingless adult.

Wingless specimen.—Hairy, and in this respect similar to the pupa? (winged specimen not hairy). Antennæ nearly as long as the body; in what is described as the pupa they are longer than the body. The abdomen large in proportion to the rest of the body, and instead of tapering from the base enlarges to the middle, and gradually rounds to what appears to be a broad tail.

Size; length of body of winged specimen, .06; to tips of wings .11 inch.

Prof. Bundy says in reference to them: "Female, pale yellowish, abdomen with a transparent greenish tinge slightly orange on the head and thorax. Found at Sauk City, Wisconsin, on the oak, in June; scattered:

I think there can be but little doubt that the specimens here described belong to Mr. Walsh's *Aphis bella.* For the purpose of comparison, I add here the original description of the latter:

"*Aphis Bella.*—Oak leaves? Bright yellow. Eyes black; antennæ with the tip of joints 3-6 black. Prothorax as long as the head with a lateral black vitta; thorax with a black vitta extending from its anterior angle to the base of the front wing. Honey-tubes scarcely as long as the tarsi, generally immaculate, sometimes tinged with fuscous. Legs long, black except the base of the femora and the coxæ. Wings hyaline; front wings with the entire costa as well as its nervures black to the tip of the stigma, whence there extends a marginal dusky vitta, as wide as the costa at base and middle but tapering at tip, nearly as far as the middle branch of the third discoidal vein; this vitta covers the entire length of the fourth or stigmal vein, which terminates half way between the tip of the stigma and the apex of the wing, is slightly and gradually curved, and encloses a marginal cell not wider than the costa; hind wings with a costal dusky vitta extending to the tip of the wing, the sub-costalvein sometimes black; remaining veins of both wings slender and pale-dusky, narrowly bordered with sub-hyaline where they traverse the terminal dusky vitta of the front wing. Length to tip of wings .15 inch.

"The antennæ attain the middle of the stigma when the wings are expanded, and the stigma is rather more than three times as long as wide, not very acute at each end."

The 22d of May, 1878, I discovered, at Carbondale, Ills., on the leaves of the burr oak (*Quercus macrocarpa*), plant lice, which I am inclined to believe belong to the species just described. In order that the reader may be in possession of all the facts concerning the species, I add here a description of these specimens.

Winged individuals (the only kind seen)—rather slender, of medium size; the body and all the parts except the wings a pretty creamy yellow color; the wings thin but clouded with fuscous, which is very distinct in the hiving insect while the wings stand erect above the abdomen; these fuscous or cloudy spots appear to fall chiefly into two irregular oblique bands, one rather in advance of and the other behind the stigma, but when a single wing is examined this arrangement will scarcely be observed. Costal and sub-costal veins of the front wings close together and parallel throughout; second discoidal vein decidedly sinuate and much nearer to the third than to the first; third obsolete at the immediate base, curving somewhat strongly outward as it approaches the origin of the first fork; second fork rather nearer to the apex of the wing than to the third vein but difference slight; fourth vein very sharply curved throughout so that its middle portion approaches much nearer the first fork than its ends. Antennæ longer than the body, slender; third joint longest; fourth a little shorter than the third; fifth a little shorter than the fourth; sixth about half the length of the fifth or less; seventh in the only complete antennæ obtained, about as long as the fifth. On most of the specimens I was unable to observe any honey-tubes; but in one specimen found on the same leaves and which appears to belong to this species, these were apparent but very short, their length scarcely exceeding their diameter. This specimen was of the same delicate yellowish color, but the wings were perfectly pellucid. It is impossible to decide in reference to the honey-tubes from the mounted specimens which are imperfect.

On one of these specimens I found a species of mite fastened to the metathorax or base of the abdomen so as not to interfere with the flight of the Aphis. It is probably a species of *Trombidium* but as it is evidently in its larval state it is difficult to assign it to its proper position. It is probably the young of Dr. Packard's *T. bulbipes* but it differs from that species in not having the tarsi enlarged; it also has the tarsi furnished with two strongly curved claws.

It is possible that this is Dr. Fitch's *Lachnus quercifoliæ* but it is impossible to identify the two from his very brief description. It approaches very nearly to *Aphis quercus*, Kalt, which Koch has placed in *Callipterus*, and I would have identified it with that species but for the clouded wings. It will fall in *Myzocallis* as I have given the characters of that genus, and is probably a variety of the species under which I place it.

MYZOCALLIS HYPEICI. New sp.

Found on St. Johnswort, Carbondale, Illinois, in April.

Winged individuals.—Wings pellucid, veins slender and pale brown; third vein obsolete at the base; second fork nearer to the apex of the wing than to the third vein; fourth vein curves somewhat rapidly near the base and then is nearly straight; stigma not very distinct, posterior angle distinct but very obtuse. Antennæ not quite as long as the body; third joint longer than the seventh which is about the same length as the fourth; fourth and fifth about equal, each nearly as long as the third; sixth about half the length of the seventh. Similar in color to the wingless but rather darker. Anterior femora and the tibiæ of all the legs pale; eyes black. No honey-tubes visible; beak reaching nearly to the base of the third pair of legs.

Wingless individuals.—Purplish, pruinrose or covered with a powdery substance, margin of the abdomen expanded, with a row of black dots along the sides. Indications of very minute, black honey-tubes, but these are more apparent than in any other specimens. Tarsi, knees and tips of the antennæ dark. Antennæ a little longer than the thorax.

Found on *Hypericum prolificum*, on the leaves and their petioles. Size small.

In some of the specimens the second fork presents a very distinct fork. The seventh joint in this species is really but a long spur to the sixth, a strong power showing that there is no articulation between the two in specimens rendered translucent by long immersion in Canada balsam. But after all is this not true in reference to the *Aphidini?*

Genus CALLIPTERUS. Koch.

Passerini and Buckton place this genus in *Lachnini* which group they characterize as containing species with six-jointed antennæ. Koch also gives it the same position in his tabular arrangement, but in the body of his work this arrangement appears to have been abandoned in some respects, and there the genus is placed in advance of *Lachnus*. The antennæ are in fact seven-jointed counting the portion beyond the offset at the end of the sixth as a joint, as is done in the other *Aphidini*.

Characters.—Front wings with the third discoidal vein twice forked; posterior wings with two discoidal veins. Antennæ seven-jointed, not on tubercles, third joint longest; seventh joint shorter or not longer than the sixth, sometimes appearing as but a spur to the sixth. Honey-tubes short, sometimes sub-obsolete. The beak short or of but

medium length. Antennæ and body smooth. Wings usually very thin and delicate, the veins sometimes margined with fuscous, sometimes very slender; third discoidal vein sometimes arising at or unusually near the base of tho stigma; wings sometimes clouded. Color usually pale yellow or pale brown.

This is evidently an osculant group connecting the true *Aphidini* with the *Lachnini*, I have placed it at the end of the former tribe in preference to placing it at the commencement of the latter, as this appears to be the more natural position for the species.

By this transfer the necessity for Passerini's genus *Pterocallis* is entirely obviated.

I think it quite probable that when the history and habits of this species become better known, and a natural grouping of species is undertaken, that it will be found necessary to bring together most of the species of *Callipterus*, *Myzocallis*, *Pterocallis* and *Hyalopterus*. Mr. Walsh's genus *Calaphis* is evidently founded on an abnormal species, which I think beyond question belongs to the present group—either to this genus or *Myzocallis*.

The absence of the fourth or stigmatic vein occurs occasionally in this group. By placing the wing under a strong microscope the line of the vein can be traced by an almost imperceptible row of minute hyaline dots.

Callipterus betulæ? Koch. The Birch Aphis.

Aphis betulicolens? Fitch.
Calaphis betulella? Walsh.

I am not positive that the species here mentioned are indentical but have concluded it is best to so consider them until further investigations shall determine this question.

Koch's species is more than usually large which agrees with the measurement given by Dr. Fitch, of his species. The winged female is greenish yellow; antennae and lobes of the throax black; head brown; legs dull yellow, except the shanks and tarsi of the front pair which are dusky; the veins of the wings dark except the subcostal, which is greenish yellow. The antennae are long reaching beyond the tip of the abdomen; wings large; honey-tubes obsolete; body slightly hairy; legs quite long.

Dr. Fitch describes his species as follows:

"Sulphur yellow; antennae deep black except the two basal joints, which are sulphur yellow; the following joints are white at the base. Nerves of the forewings black, the costal sulphur yellow, the base of the forked vein hyaline; stigma transparent yellow. Honey-tubes very short. Length, .18 inch," [to tips of wings.]

This is certainly not the *Aphis betulæ* of Linnæus.

Mr. Walsh's species may be distinct but I doubt it very much; the absence, or apparent absence, of the fourth vein is not unknown in this group, and if of any value must as he argues, place it in a different genus.

He describes his species as follows:

"*Calaphis betulella*—Yellow. Antennæ attaining the extreme tips of the expanded wings, black, joints 1 and 2 yellowish with a black vitta half inside and half beneath; joints 3–6 each white at base; eyes black, with a black line from each to the insertion of the rostrum, which is black; head with a narrow black vitta above, acute in front, commencing between the antennæ and attaining the prothorax. Prothorax and thorax with a narrow lateral vitta commencing at the eyes, passing just inside the base of the wings, and converging on the scutel, and another dorsal one, black. Abdomen with about seven dorsal black fasciæ at the tips of the joints, the basal and several of the terminal ones often interrupted or obsolete, occasionally only three present. Honey-tubes fuscous, scarcely as long as the tarsi. Legs yellow, femora with an anterior black vitta, abbreviated at tip, and a terminal and subterminal black faciæ above; tibiæ and tarsi black. Wings hyaline, stigma generally yellowish; subcostal and three discoidals coal-black, very robust, subequal, except at the origin of the third discoidal where the subcostal is fine and paler, and the third discoidal hyaline for a short space, whence it becomes obsolete. Hind wings with all the veins slender, subhyaline. Length .07–.09 inch; to tip of wings .15–.17 inch, expanse .30–.35 inch.

The stigma is three times as long as wide, moderately acute at each end.

Antennæ long, linear, seven-jointed; 4 shorter than 3, 5 shorter than 4, 6 less than one-half as long as 5, 7 slender, twice as long as 6. Prothorax more than half as long as the thorax. Honey-tubes moderate. Wings steeply roofed and differing from those of *Aphis* only in the total absence of the fourth or stigmal vein and in the unusually robust discoidal veins."

This description would, according to the characters given, place this species in *Myzocallis*, but I prefer to allow it to remain until the question of identity can be positively determined.

Callipterus ulmicola n. sp.

This exceedingly delicate species I find in the collection of Plant-lice sent me by Prof. W. T. Bundy, of Sauk City, Wisconsin, the accompanying note, which is given below, is too brief to aid much in determining it. I am forced therefore, in describing it, to rely upon the characters shown in the alcoholic specimens, with the exception of the general color.

Winged specimen.—Wings exceedingly delicate and transparent, appearing as a mere film, even the veins scarcely visible with a common pocket magnifier, when seen through a strong microscope the latter are pale transparent yellowish; the subcostal much the largest, and nearly parallel with the costa, bending slightly inward at the insertion of the first branch vein, which is farther from the base of the wing, and nearer the stigma than usual, it also makes a sharp curve forward toward the costa at the base of the stigma; the second vein rises about the base of the stigma, it and the first vein both curve somewhat strongly outward (toward the apex of the wing) at base;

third vein, which is twice forked, arises apparently from the stigma, but is obsolete or nearly so at the immediate base. The fourth vein is nearly obsolete, when seen under a strong microscope it is represented by a series of points; curves regularly but not sharply. Stigma rather broad, somewhat hatchet shaped, widening toward the apex, with a distinct angle at the point where the fourth vein arises. The second fork of the third vein about equally distant from the apex and third vein. Posterior wings with two branch veins. Antennæ not on a tubercle, about as long as the body; third joint long; fourth about three-fourths the length of the third; fifth fully as long as the fourth, and about twice the length of the sixth, which is a little longer than the seventh. The whole antenna is quite slender. Honey-tubes imperfect in all the winged specimens, but appear to be very short, length not exceeding the diameter.

Wingless specimen.—Front of the head rather obtusely advanced in the middle. Honey-tubes very short, length less than the diameter; tip of the abdomen extending or drawn out to a point, but no true tail was observed. Along the lateral margins of the abdomen, in front of and behind the honey-tubes are minute tubercles, each giving rise to a hair; these tubercles are quite distinct, and about one to each segment.

Prof. Bundy furnishes the following brief note in reference to this species:

"On elm (*Ulmus Americana*). June, Sauk City, Wisconsin; scattered. Female uniform lemon-yellow."

I am in considerable doubt in reference to the proper generic position of this species. It evidently belongs to *Callipterus*, as defined by Koch, but Passerini has cut off from this his genus *Pterocallis*. I have but one memoir of the latter author, and although this contains a conspectus of the genera, it does not contain a diagnosis of this genus.

So far as I can ascertain this species is evidently quite distinct from any other species described as from the elm.

Callipterus quercifolii. N. Sp.

Winged specimen.—Antennæ nearly as long as the body, seven jointed; first joint quite large and very prominent, nearly twice the length and twice the diameter of the second joint, which is rather small, and of the usual sub-orbicular form; the third joint longest, but it exceeds the 4th very little, 5th very little shorter than the 4th; sixth not more than one third the length of the fifth; seventh a little shorter than the sixth.

The wings as usual; third discoidal vein of the front pair twice forked; the hind pair with two discoidal or branch veins; all the veins and branches are bordered with dark brown, giving them the appearance, when seen through a pocket magnifier of broad black veins; the bordering does not expaned at the tips of the veins, but retains its uniform width throughout. Stigma opaque, brown, with a posterior bordering of brown, fusiform in shape, being very acutely pointed at the apex, with no internal angle at the point where the fourth vein arises.

Costal vein very distinct, and rather prominent, it and the sub-costal vein are remarkably parallel, the distance apart scarcely varying even to the smallest degree from the base to the stigma. Distance between the insertion of the first and second, and second and third veins about equal; the second fork about equally distant from the apex and first fork. Fourth vein nearly straight at its base, curving regularly but not sharply towards its apex, runs very nearly with the first fork of the third vein.

The front of the mesothorax distinctly broader than the prothorax, the offset forming a distinct shoulder. The abdomen terminating suddenly and bluntly; no tail apparent. Honey-tubes very short and thick, slightly enlarged at the base, the length greater than but not twice the diameter.

When seen through a pocket lens, these (alcoholic) specimens appear dark brown; the antennæ annulated alternately with dark brown, or fuscous and white; the legs brownish or dusky with the base of the femora and tips of the tibiæ pale; the wings transparent with the broad dark-brown or fuscous veins previously described. The body dark-brown except the tip of the abdomen, which is pale and shows traces of transverse dark bands.

Wingless specimen.—Somewhat regularly ovate but sub truncate at the posterior extremity, or at least rounded very bluntly and suddenly to the tip. Antennæ not quite as long as the body showing the light and dark annulations very distinctly. Eyes of this as well as the winged specimens reddish brown. The ground color of the body of the alcoholic specimens, is pale dirty yellow, but the dorsal surface is chiefly occupied by broad transverse brown or fuscous bands which extend to the somewhat broad depressed portion of the lateral margins; there is one band on each segment; a pale line runs along the middle of the back from the head to the tail. Legs as in the winged specimens. Scattered over the body are stiff spine-like, black hairs; it is also more or less covered with small tubercles. Honey-tubes as in the winged specimens, pale yellow.

Length of winged specimen to the tip of the abdomen (which is somewhat shrunken) .06 inches; to tip of the wings .15 inches.

Prof. Bundy, of Sauk City, Wisconsin, from whom the specimens were received, makes the following statement in reference to them: "Abdomen of the female light green below, black above with four greenish spots; honey-tubes and tip of the abdomen white, head and thorax black, shining above. Eyes black; antennæ light, banded with black; wings with widened veins and tinged with purple (reflection.)" "On Red Oak (*Quercus rubra*) leaves, in June, Sauk City, Wisconsin. On both sides of the leaves along the veins. Leaves becoming viscid from their secretions."

This is evidently distinct from the *Callipterus quercus* of Kaltenbach, which is of a pale ochre color throughout, and nearly smooth, and has the veins of the wings unmargined. It approaches somewhat closely to the *C. juglandis* Frisch, which is found on Walnut. In that species the markings of the abdomen are almost exactly as in this, but the abdomen is much more drawn out and tapering than in this, but it is more than probable that the shrinkage caused by the alcohol has caused this to present the blunt appearance.

CALLIPTERUS CASTANEÆ. Fitch. The Chestnut Gay-louse.

On the under sides of the leaves of the chestnut tree, puncturing them and sucking their juices in August and September; a small, sulphur-yellow plant louse, with black shanks and feet, its antennæ also black except at their bases and as long as the body, its wings pellucid, their first and second oblique veins and the tip of the rib vein edged with coal-black, and its thighs straw-yellow. Length 0.09, to tip of the wings 0.15.

This insect, in company with wingless larvæ and pupæ of the same color, may frequently be met with upon the under sides of chestnut leaves. The name, "gay-louse," which is of the same import with the generic term, *Callipterus*, and is the equivalent of the German name, *Zierlaus*, which Koch applies to these plant lice, will be the most appropriate designation which our language furnishes for this and other species of this genus. Their bright, lively colors, and their long, slender antennæ and legs, render them the prettiest objects belonging to the Aphis family. (Fitch.)

SECTION LACHNINI.

This secion, as heretofore stated, corresponds, as usually given, with the sub-family *Lachninæ* of Passerini. As here given it differs in having *Callipterus* removed from it.

It is distinguished from the *Siphonophorini* and *Aphidini* by the following characters: The antennæ are but six-jointed, the sixth sometimes being furnished with a short spur which might be considered as a rudimentary seventh; the honey-tubes are reduced to simple tubercles or are obsolete. The antennæ are not situated on tubercles. Like the previous tribes or sections, the species belonging to this have three discoidal veins in the front wings, the third twice forked; the the hind wings two discoidal veins. So far as known, all the species produce winged individuals at some time; and are oviparous and viviparous as in the preceding sections.

They are found generally on trees or woody plants and mostly on the limbs and leaves. All or nearly all of our species so far as investigated are found on trees.

None of the species have, so far as I am aware, ever been found doing any considerable injury to useful or ornamental trees in this country.

The section is a limited one as at present restricted, containing but two or three represented genera, and but few species.

GENUS LACHNUS. Illiger.

This genus is closely related to the preceding one; as in it, the front wings have the third discoidal vein twice forked, but the stigma is more of a linear shape, being longer and narrower; and the fourth, or stigmatic vein nearly straight or but slightly curved; the posterior wings have two branch veins. The antennæ are usually short, extending but little beyond, and often not to, the middle of the body, but slightly tapering; the sixth joint is usually or perhaps always furnished with a little spur at the tip, which is shorter than the sixth joint and often minute. The head is small and the prothorax narrow; the abdomen is rather more than usually broad, especially posteriorly. The beak long and rather slender, extending to, and even beyond, the posterior coxæ. The honey-tubes are reduced to mere tubercles, and sometimes almost obsolete. The colors are generally somber, dull red, brown and black prevailing. Dr. LeBaron was of the opinion that, as a rule, the abdomen is marked by transverse rows of dots; but there are too many exceptions to consider this a rule.

Although often found on the branches of trees, they are by no means confined to these, as they frequently occur on the leaves; but as a very general rule they reside on trees.

LACHNUS SALICICOLA, Uhler. The Plant-louse of the Willow.

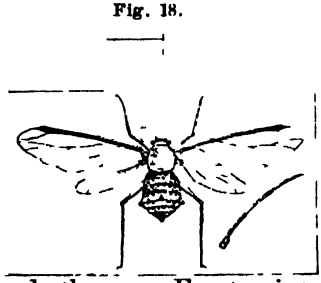
This is the *A. salicti* of Harris, but as this specific name had already been given by Schrank to a European species infesting the willow, Uhler changed it to the name we have here given. It is evidently very closely allied to the following, yet appears to be distinct. It is a large species, although smaller than *L. dentatus*, and lives on the branches and twigs of various kinds of willows, clustering together on the under side, often in great numbers. The winged individuals ap-

pear about the first of October. The body measures about one-fourth of an inch in length; to the tips of the wings about two-tenths. They are without the conical projection, or stylet, found in most of the species already described, at the tip of the abdomen; the honey-tubes are much shortened. The body is black, and the abdomen is without dots which are so often present in this genus. The wings are pellucid, but the veins are yellowish, as are the legs, the honey-tubes and the first joint of the antennæ. As in the following species, when crushed it gives out a stain of reddish or deep orange color, showing such a strong resemblance to that species in this respect, as well as in its habits, that were it not for the marked differences in coloration and size we should not hesitate to consider them as but varieties of one species, which further evidences may yet prove to be the case.

LACHNUS DENTATUS, LB. (Fig. 18). The Spotted Willow. Aphis.

As Dr. Le Baron---who first named this species---has already described it in his Second Report, it will be unnecessary for me to do more than simply mention some of the chief characters as there given, as I have nothing to add to what he has said.

Fig. 18.



It is found in October and November, in colonies, on the under side of the branches of the gray willow; and occasionally, but apparently accidentally, on trunks of small nursery apple trees. The winged individuals measure about one-sixth of an inch to the tip of the abdomen; the wings expanding about half an inch. Black; abdomen dark and ash color, with six transverse rows of black dots. Antennæ as long as the head and thorax. Front wings with a very long stigma; the third vein withtwo forks, as usual in this genus. Honey-tubes reduced to mere tubercles. Thighs dark honey-yellow, broadly tipped with black; tibiæ dusky reddish at the base. The dots on the abdomen are very distinct in the full grown individuals, the intermediate rows have six dots in a row. Just behind the middle of the abdomen and occupying the place of the two middle dots in the fourth row, is usually a somewhat conspicuous, black, conical protuberance. When crushed they stain the fingers red.

The cross at the top of the figure represents the natural size of the insect when the wings are opened; the bent line to the right is a crude representation of an antennæ enlarged.

LACHNUS CARYÆ. Harr. The Hickory Plant-louse.

This is the *Aphis caryæ* of Harris, and is found on the pig-nut hickory (*Carya porcina*), clustered on the underside of ,the limbs in summer. It is perhaps our largest species, measuring one-fourth of an inch to the tip of the abdomen, and above four-tenths to the tips of

wings. The honey-tubes are quite short, and there is no stylet at the end of the abdomen. The body appears to be slightly powdered or pruinose; the abdomen is marked with four transverse rows of black dots; the upper side of the thorax and the veins of the wings are black, as are also the tibiæ and tarsi; the thighs are reddish brown; the antennæ are dark and clothed with black hairs.

LACHNUS STROBI. Fitch. The White-pine Lachnus.

Found in colonies on the ends of the branches of the white pine, and probably also on other pines, puncturing them and extracting their juices; giving to the bark on which they are located, a peculiar black appearance. The winged individuals measure two-tenths of an inch to the tips of the wings; they are black, hairy and sometimes dusted over with a white powder, with a row of white spots along the middle of the abdomen; the thighs are pale yellowish at the base; the fore wings hyaline, with black veins, the third being exceedingly slender. The wingless individuals are about one-eighth of an inch long, brownish black, with a white line along the middle of the thorax, and white spots along each side of the abdomen, but the latter are sometimes very dim, or wanting; antennæ pale, with tips black. Dr. Fitch says it is a very common thing to find winged individuals with the third vein of the fore wing but once forked, showing the very close relation of this species to the wooly plant-lice (*Schizoneura*). It is possible that this may yet prove to be identical with the *Lachnus pini* of Europe.

LACHNUS LARICIFEX. Fitch. The Tamarack Aphis.

This species is usually found solitary on the small twigs of the American larch (*Tamarack*), stationed chiefly in the axils of the tufts of leaves. The wingless individuals, which are the only ones as yet described, are of a brownish color, often with a slight coppery tinge; length about one eight of an inch; with a dull white line along the middle of the back, and a similar whitish band at the sutures of each of the abdominal segments; in these bands there are three black punctures on each side of the middle; the short tubercular honey-tubes deep black; the under side dull white and dusted with white powder; the legs pale, with the feet and knees black. According to Dr. Fitch, from whose report the above description is taken, many of these insects were noticed on a particular tree, in May, but no winged ones among them. Many of them were accompanied by four or more young, huddled close around the base of the sheath from which the leaves arise. These were dull yellow with two brown spots on the abdomen, near the base.

LACHNUS ABIETIS. Fitch. The Spruce-tree Lachnus.

Occurs on the *Abies nigra*. The wingless females are pubescent, broadly oval, blackish, clouded with brown, with a faint ashy stripe on

the back; under side mealy, with a black spot near the tip; antennæ dull white, with a black ring at the tip of each joint. Length to the tip of the abdomen, 0.15 inch. Whether this is the *L. abietis* of Walker or not, I am not at present able to state.

LACHNUS ALNIFOLIÆ. Fitch. The Alder-leaf Lachnus.

Found on alder leaves. Green; antennæ greenish-white, with four black rings; legs greenish white; feet, knees and a line on the posterior side of the tibiæ, black; wings hyaline, the discoidal veins black. Length, 0.10 inch.

LACHNUS QUERCIFOLIÆ. Fitch. The Oak-leaf Lachnus.

Dr. Fitch describes this species as follows:

"Light yellow; antennæ pellucid white, with a slender black annulus at the tip of each joint; fore wings with a blackish spot on the apex of each nerve, and a deep black dot on the base of the curved apical nerve; stigma whitish. Length to the tip of the wings .15. On the leaves of the white oak. Male (?)."

The following is a description of a species I found on white oak leaves, which I presume is the same that Dr. Fitch describes:

Apterous individuals.—(apparently hardly full-grown).

Antennæ longer than the body; third joint longest, the second about four-fifths the length of the third, thence decreasing regularly to the sixth, which is divided into two parts differing in diameter, or there is a seventh which is not more than half of the length of the sixth; sparsely covered with hairs placed alternately. Honey-tubes very short, the diameter exceeding the length, snowy white; tail short, semi-circular; body slightly hairy. General color brown; head paler and yellowish; first two pairs of legs transparent white; hind legs brown, except the tarsi, which are pale. Beak whitish, and reaching slightly beyond the third coxæ. The young are yellowish white, with brown patches; as they increase in age they grow darker, assuming a tortoise-shell appearance; the middle of the back and a spot each side of the abdomen at the shoulders, pale. The older specimens show a distinct ridge along each side of the abdomen. Segments of the abdomen very distinctly marked. Nearly oval in form; length less than one-tenth of an inch.

Found on the upper surface of the leaves of the white oak, at Carbondale, Illinois, in August.

If this is the same as Dr. Fitch's species, I have some doubt as to the correctness of the generic position he has assigned it; but am unable to determine positively until I can obtain winged specimens; if these should have clouded wings I would place it in *Callipterus*. They were partially covered by fine particles of matter apparently cemented by a viscous fluid.

LACHNUS SALICELIS. Fitch.

Under this name, Dr. Fitch gives a brief description of a species found on the willow which he supposes is different from either of those described as found on this tree. It is smaller than the one first described by Dr. Harris *L. salicicola,* and like that species is without the transverse rows of dots on the abdomen; and I rather suspect that after all it is but a variety of that species.

It is black; tibiæ and base of the antennæ pale; base and costal margin of the forewings yellowish-white. Length .08 inch. Resides on the succulent twigs.

LACHNUS ULMI. Linn.

In my paper on Plant-lice published in the 10th vol. of the Transactions of the Illinois State Horticultural Society, I mentioned a species by this name, following Dr. Fitch. This was an error, the species described by Linnaeus as *Aphis ulmi* is now *Schizoneura ulmi* hereafter described. The *Aphis ulmi* Deg. is now *Tetraneura ulmi.*

LACHNUS POPULI. Linn.

In the same paper I noted a species by this name, also following Dr. Fitch. This is now *Chaitophorus populi* and is distinct from our species, which I have named *Chaitophorus populicola.*

LACHNUS LONGISTIGMA. Monell.

"General color dusky, abdomen cinereous, with four rows of black dots. Apex of the stigma extending to the stigmal vein. Third joint of the antennæ as long as the two following taken together, sixth joint about half as long as the penultimate.

Length of the body 0.17—.20 inch; to tip of wings 0.33—.35 inch.

"The antennæ, body and legs are very hairy. Head and thorax black. Abdomen ash gray, but appearing dusky on being divested of the puinose matter; dorsal surface with four rows of black spots, which, on close inspection with a lense, appear to be slightly elevated above the surface. Wings somewhat fumose; the "insertions" red. The veins are as usual in this genus, the first two discoidals being very much more robust than the cubitus. Stigma black, linear, extending along the apical margin of the wing to the apex of the stigmal vein, which is short and quite straight. The stigma is often slightly yellowish towards the tip and, in normal specimens, seems to extend just to the apex of the fourth vein, but frequently they are about .005 in. apart; and in one abnormal specimen the stigma extended nearly .01 beyond the stigmal vein. In some specimens the

intercostal cell is not perceptible, the costal and sub costal veins appearing as if connate, while in others the exterior basal angle of the stigma is not so far back as the base of the cubitus. The distance between the apex of the upper furcal andthat of the stigmal vein, is equal to about one-third of the distance between the tips of the furcals.

Since the above was written, I have found this *Lachnus* living in great abundance on the underside of the branches of Linden, a few miles west of St. Louis. The apterous specimens do not differ in coloration from the winged ones. The newly born larvæl have the head, thorax and legs yellowish and the abdomen greenish." (Monell.)

Genus PHYLLAPHIS. Koch.

This genus is very similiar to *Lachnus*. The third discoidal vein of the front wings is twice forked; the fourth, or stigmatic vein, is slightly curved but not so distinctly as in *Callipterus*; the stigma is trapezoidal, but narrow, approaching *Lachnus*in this respect. The antennæ short, scarcely extending beyond the end of the thorax; spur of the sixtL joint sub-obsolate. Body broad behind and wooly. Only one species has been placed in this genus, the *Aphis fagi* of Linnaeus, which is found on the beech.

Phyllaphis fagi. The Beech Aphis.

The winged female is of a bright green color; thorax dark green; abdomen with alternating, dark and light green, transverse stripes; eyes red; legs dull yellow; head and prothorax yellow; abdomen yellowish with interrupted, greenish, transverse stripes; antennæ and legs yellowish. (From Koch's figure.)

genus SIPHA. Pass.

This genus resembles *Aphis* so closely that it is unnecessary to mention any characters, except the one in which it differs from that

genus. the antennæ are usually quite short extending but little beyond the end of the thorax; they are but six jointed, and in our species are similar in form to those of *Aphis*.

SIPHA RUBIFOLII. New sp.

This species found on the leaves of the blackberry, bears a close resemblance to the *Aphis mali* in color, size and habits, but there is one marked difference which would seem even to forbid its generic association with that species.

Winged female.—Head and thorax black; abdomen green; wings with dark veins, and when seen together above the back, in the living insect, presenting a slightly smoky appearance. The fourth or stigmatic vein regularly curved; stigma elongate, pointed, usually slightly dusky; the second fork of the third vein about equally distant from apex and third vein, in the wing on the one side, while it is much nearer the apex in the wing on the other side, of the only specimen where this character is observed. (Other winged specimens were examined, but no attention was paid to this character until after they were mounted, when it was found only one winged specimen had been preserved. Particular care was not taken of them, as I felt confident from my examination at the time, which was somewhat hasty, that they were identical with *A. mali*). Costal and sub-costal veins pale on their basal half. Abdomen pale green, with the margin and a line, darker green. Honey-tubes short, cylindrical, not reaching to the tip of the abdomen (base of the tail), pale, transparent green. Tail short, conical, rather obtuse.

Antennæ of all examined, winged and wingless, at the time they were found and those preserved, are but six jointed under the strongest magnifying power I have at hand; not quite as long as the body; first and second joints short and thick as usual in Aphis; third joint longest, exceeding in length fourth and fifth joints combined; fourth about half the length of the third, and a little longer than the fifth; sixth or apical joint setaceous and of the same form as in those with seven joints, shorter than the third, but longer than the fourth. The fifth is the usual form of the sixth, but rather longer in proportion; the third is longer than usual but no constriction, or amalgamation of, two joints, can be seen in any specimen examined; usually fuscous but not black, pale at base. Legs pale. tarsi fuscous.

Wingless.—Body oval shaped; abdomen pale green, a darker green transverse stripe at the base, with usually five wavy lines of the same color, running from it toward the tip, occasionally there are dark green spots; head, legs and antennæ pale, with a yellowish tinge; tarsi and knees dusky. Antennæ short, not reaching to or beyond the honey-tubes; honey-tubes short, as in the winged.

Found on the underside of the leaves of the common blackberry, usually along the mid rib or one of the larger lateral veins, causing the leaf to curl downwards. When near or along a branch vein, the curling is very irregular, contorting the leaf.

To all appearance, save the antennal character, this seems to be a true Aphis, but this, according to present classification, would exclude

it from this genus. It is possible it belongs to Passerini's genus *Sipha* in which I have placed it provisionally; but I am inclined to believe it a true *Aphis*, notwithstanding the remarkable variation in the antennæ.

SIPHA MAYDIS. Pass. The Corn or Maize Sipha.

I am not aware that this species is to be found in the United States; but as it is observed to infest our great staple, Indian corn, in Italy, it is possible that it may also infest it in the southern states.

Wingless viviparous female. Ovate convex; above dusky and pale, and pilose; below dusky and red and smooth; antennæ a little longer than the thorax, yellowish, fuscous at the base and apex. Legs dull yellowish; tarsi dusky.

Winged viviparous female. White and black above; fuscous beneath; wings opaque white, veins white.

Occurs on the underside of the leaves of maize or Indian corn, and some other plants as sorghum, etc.

SUB-FAMILY PEMPHIGINÆ.

This sub-family differs from the preceding one in several important respects, both as to character and habits. It also contains within it several sub groups or sections, differing from each other as widely as do the divisions of the sub-family already considered, in fact each genus given in the preceding synoptical table forms a distinct section.

Buckton, relying upon the wing characters as his guide in dividing the family, has separated this group into two sub-families; but I have preferred to follow, in the main, Passerini's arrangement, modifying it by the introduction of a genus he has placed elsewhere, which necessitates the modification of the characters he has given.

The characters of the group as now given will be as follows: Front wings with three discoidal veins; the third in some genera once forked, in others simple: the hind wings in some genera with two branch veins, in others with but one. As a very general rule the wings are erect in repose, but in a few species they rest horizontally on the abdomen. Some of the gall inhabiting species, when first taken out of

their place of confinement, have the wings apparently horizonatal or nearly so, but they soon assume the normal, erect position, if the insects are allowed free exercise in the open air. I have observed this habit in the species that inhabits the cockscomb gall of the elm. The antennæ are usually six-jointed, but in one genus which I have introduced into this sub-family, they are but five-jointed. Serville and Amyot (*Hist, de Hemip.*), or the authors they follow, have made a singular mistake in reference to the number of joints in these insects, in giving the characters of their *Myzoxylides.* which inclndes the sub-family now under consideration. They state that these organs contain but five joints, the *second* being the longest. It is evident they overlooked one of the two small basal joints. The third joint is the longest, as is the general and almost universal rule throughout the family. These organs are short, seldom reaching beyond the middle of the body, and often extending no farther than the middle of the thorax.

Some of the species reside upon the bark of the trunk and branches of trees, others on the leaves of various plants; some have the habit of covering themselves with a cottony secretion, while others, by a singular provision of nature formd, galls in which they reside.

This white, cottony substance is secreted by certain glandular organs in the abdomen and thorax, with which the species that produce it areprovided. Its production is not confined to thisfamily, the Beech-aphis of the preceding family producing it in threads as long as its body; nor is it an uncommon occurrence among the *Chermesinœ.*

This substance, which bears some analogy to silk, if examined by a high magnifying power, will be found to consist of long, flattened threads or fibres, which when broken across present sharp fractures as if they were brittle, and, according to Buckton, from whose work this statement is taken, they present obscure transverse and longitudinal striations.

The same author states that this material is insoluble in water, alcohol and solution of potash; that it scorches brown over the lamp without melting; and gives off at the same time a nitrogenous odor like burnt feathers. He concludes therefore that it is a different substance from the waxy secretion of many other Homopterous insects.

That the substance resembling cotton found covering such species as the Wooly Aphis of the Apple-tree is not of a waxy nature, and is insoluble in water and alcohol I know to be true by experiment, and that it will not dissolve like wax by heat I also am aware is true. But that some species at least of *Pemphigus* do secrete a waxy substance that will dissolve on being submitted to the heat of the hand I think is also true. In one instance at least I have observed this to be the case. But in this instance the secretion took that peculiar form seen in other Homopterous insects of which Mr. Bucton speaks. I am also inclined to think the same thing is true in reference to one at least of the species infesting pine leaves and twigs.

In some cases this secretion, instead of being lengthened out into fibres, assumes the character of down or fine powder, like meal. This substance, at least when it is in the form of meal, protects the Aphides from water which would otherwise prove destructive where they are

in confined positions and subject to its action, as in Galls and subterranean situations. The value of this mealy secretion to these insects can readily be tested by putting a small drop of water into the midst of a colony of the Elm-leaf Aphis (*Schizoneura ulmi*); or it may be seen in some of the larger galls made by Pemphigi, where small drops of fluid may be seen rolling about, apparently without in the least discommoding the inhabitants.

The little shining, colorless, spherical bodies which can be seen rolling about among the colonies of the Elm-leaf Aphis, when we handle the curled and distorted leaves, according to Buckton, consist of fæcal matter discharged from the anal aperture. They are sometimes taken by mistake for eggs.

As is well known to all who have studied with any degree of care the habits of insects, galls are produced by species of several different orders, and that, as a rule, each species forms a gall of a peculiar shape. Although not confined wholly to this sub-family yet it is here we find the gall-making habit chiefly developed; and in fact confined mostly to the species of the true *Pemphigini* included in section two as below explained. What particular agency is employed and how developed to form these galls is yet an unsolved mystery. Blot says, the female inserts an egg under the surface of the young leaf in the tissue and that the gall grows up around it, or to use his words, "is born upon the surface." But the peculiar character of the gall does not appear to agree with this statement. Instead of being true, closed galls they are, in fact, abrupt, purse-like foldings of the entire thickness of the leaf-blade, leaving a narrow opening on the side opposite to the gall for the escape of the insects, which having no means of eating their way out, would otherwise be hopelessly confined in a prison of their own building; the galls formed by mites are similarly constructed. In reference to the method of passing the winter, it appears to be generally conceded by entomologists that, as a rule, it is in the egg state. I have some reason to question this conclusion if it is to be applied to all the species. My reason for this doubt will be given when I come to describe the Wooly-Aphis of the Apple-tree (*Schizoneura lanigera*). I am inclined to believe some if not all, the species of this sub-family will approach more nearly to Phylloxera in their mode of reproduction and of passing the winter than to the true *Aphidini*.

As a general rule the species are ærial, that is, they reside exclusively above ground, but one or two at least and in all probability some others of the trunk-inhabiting species, penetrate to the roots and become subterranean; whether these can be considered as true dimorphic forms has not as yet been satisfactorily determined.

This sub-family, as above indicated, may properly be divided into two or three different sections. The following arrangement appears to me to be the most natural.

A. Third discoidal vein of the front wings twice forked.
  a. Antennæ six-jointed. Sec. 1. *Schizoneurini.*
  aa. Antennæ five-jointed. Sec. 2. *Vacunini.*

AA. Third discoidal vein of the front wings simple; antennæ six-jointed. Sec. 3, *Pemphigini.*

Section 1. SCHIZONEURINI.

This section corresponds with Buckton's sub-family *Schizoneurinæ*, and is distinguished by the following characters: Third discoidal vein once forked; antennæ six-jointed. In a complete synopsis of all the known species it might be useful to divide the section into two sub-sections based upon the number of branch veins in the hind wings; but this is unnecessary here, as I have included all of our species of which I have any knowledge under two genera, each representing one of these sub-sections.

Genus SCHIZONEURA.

The characters of this genus are partly given above in describing the section. In addition to what is stated there may be added the following characteristics: Posterior wings with two branch veins, which usually originate close to each other, sometimes in contact. The three branch veins of the front wings, and especially the first and second, approximate at the base or point of junction with the sub-costal vein; the third is often obsolete at the base. The antennæ are short, those of the winged individuals seldom extending beyond the end of the thorax; while those of the apterous individuals usually reach only to the end of the prothorax; the third joint is longest. There are no visible honey-tubes. The body is usually rather broad, elliptical in the winged and broadly ovate in the apterous individuals. The colors are usually black, brown or reddish. The beak rather long and slender.

This is pre-eminently the wooly genus of the sub-family, and contains one of our most injurious species, the Wooly Aphis of the apple tree.

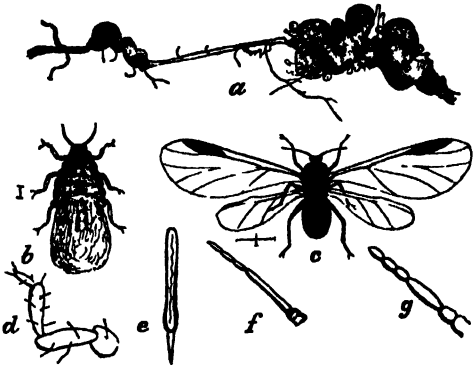
SCHIZONEURA LANIGERA. Hausm. The Wooly Aphis of the Apple-tree.

Syn. *Aphis lanigera.* Hausm.
Coccus mali. Bingley.
Eriosoma mali; (Leach mss.) Samouelle.
Myzoxylus mali. Blot.
Schizoneura lanigera. Hartig.
Pemphigus pyri. Fitch.
Aphis (Schizoneura) lanigera. Ratz.
Eriosoma lanigera, Ruricola.

I copy the following article on this species from a previous report I made on injurious insects, to the Illinois State Horticultural Society, adding at the close such new facts as I have since ascertained in reference to it.

"The *Sch. lanigera,* or Wooly Aphis of the Apple-tree, was first described and scientifically named by Hausmann in 1801, as infesting the apple-trees of Germany. According to Serville and Amyot, it was unknown in Europe until 1787, at which time it was first seen in England, having been imported that year from North America. Tougard (*Ann. Soc. d'Hort. de Paris*) asserts that it was unknown in Belgium previous to 1829. The same authors also assert that it was unknown in France previous to 1812. Harris, relying upon the authority of Sailsbury, ("Hints on Orchards,") asserts that it was known to French gardners for a long time previous to the earliest of these dates

Fig 19



Apple-root Plant-louse.

A. Part of a root infested by the Apple-root Plant-louse *B.* The larva with the usual wooly matter attached to its back. *C.* The winged insect with the wooly matter all removed *D.* Leg of the perfect insect. *E.* The beak. *F.* Antennæ of the winged insect. *G.* The antennæ of the larva.

If it was imported from America to England in 1787, it did not pass into France until 1812, and did not reach Belgium until 1829, although possible, yet it is somewhat strange that Hausmann should describe it as infesting apple-trees in Germany in 1801, and that without any hint of its recent importation. A careful examination of what is said by Serville and Amyotd in reference to this point, indicates that they overlooked Hausmann's statement, yet they used his specific name and had before them volume 1, of *Illiger's Magazine*, in which the description is found and statement made. These facts, when connected with Salisbury's statement, give us reason to doubt the correctness of the assertion that it was imported into England from America. I may also further add, that M. Eudes Deslongchamps, in a prize essay to the Royal Agl. Soc. of Caen in 1830, and M. Blot, in a work of the same date, maintained that it was not introduced from North America, but that it was indigenous to Europe, that occasionally, under favorable circumstances, it was greatly multiplied in certain localities, and then for a time would disappear, and hence the idea of its importation. The name "American Blight," given to it in England, indicates, on the hand, the popular belief in that conntry, of its American origin.

Prof. Riley in his third report (1871,) asserts, upon what authority I am unable to say, that it is conceded on almost all sides that it was imported into Europe from America, and that there is every reason now to believe the two species here mentioned are indentical, or at least but varities of one species. Whithout attempting now to decide this point, as I have no European specimens, and am without copies of some of the latest works on the subject, I will give brief descriptions of the former species—the Wooly Aphis (*Sch lanigera*)—as found in Europe, and what is supposed to be the same species found in this country.

The most recent description I have at hand at this moment is by Goureau (1862), who gives the characters briefly as follows:

Apterous individuals.—About one-tenth of an inch long; reddish brown and covered above with a white, cottony secretion; antennæ short, and pale yellow; legs yellowish; knees brown; without honey-tubes, but with a circular cicatrix in place of each.

Winged individuals.—Antennæ shorter than the head and throax, and varying in color from brown to black; head and throax black, a brownish ring at the collar; the abdomen chocolate brown; legs, brownish; wings, hyaline with the veins and stigma deep brown; body enveloped in a white, cottony secretion. Serville and Amyot give the length of the apterous individuals as only eight hundredths of an inch; they described the winged individuals as less and with the body almost naked.

1. Hausman and Knapp, and Harris, following them, were of the opinion the species never acquired wings; but so far as the European type is concerned, this is evidently a mistake; and Mr. Verrill, in an article in *The Practical Entomologist*, informs us that he has observed quite a number of winged individuals of this species—both males and females—upon apple trees in New England. These he describes as having well-formed and rather large wings, but in other respects closely resembling the apterous specimens, except that they had but little of the downy substance on their bodies, which were nearly black

and rather plump. The fore wings were large, and had three discal (branch) veins, the third one forked near the middle, and scarcely visible near its base before forking. The stigma, or colored spot, was about three times as long as broad, and acute at each end. The hind wings were about half as long as the others, and quite narrow, with two simple discal veins.

Let us now turn to the other species, the Apple-root louse (*Pemphigus pyri*), and examine briefly its history and habits, and what relation it has to the other speciest that has induced me to speak of the two together.

This species was originally described by Dr. Fitch, in 1851, as *Eriosoma pyri*, (1855) transferred by him to Pemphigus, because the third vein of the fore wings of his specimens were simple, and not forked. Mr. Walsh in volumo 1, of the Proceedings of the Entomological Society of Philadelphia and in *The Practical Entomologist* (1866), declared the two species to be distinct. In the latter, he states, in answer to a correspondent from Pennsylvania: "You think that the *Aphis* that causes warts or knots on the roots of young apple trees in the nursery is the same insect on the *Wooly Aphis* that lives on the twigs. You are, undoubtedly mistaken, for they do not even belong to the same genus, much less to the same species. The Wooly Aphis is *Eriosoma lanigera*, the Apple root Aphis is *Pemphigus pyri*."

In his first report, as acting State Entomologist (1868), he repeats this declaration emphatically, and proceeds, not only to give the differences between the characters of. the two species, but also of their habits; contending, after Blot, that the former is exclusively northern, while the latter is more southern. He also states in reference to the wooly Aphis: "It is now, however, pretty clearly ascertained to have existed on the continent of Europe from time immemorial, and it probably emigrated thence to England on imported apple trees." It is proper to add, that up to this time Mr. Walsh had not succeeded in obtaining any winged individuals of the apple root Aphis, but had relied implicitly on Dr. Fitch's description. Not only is it much less, but does not even belong to the same genus, being a true species of *Eriosoma*, with the third vein of the fore wings forked. The authors, upon making this discovery, came to the very reasonable conclusion that Dr. Fitch was mistaken in believing his specimens belonged to the apple-root louse; that they must have been stray specimens which had in some way become intermixed with the specimens of the latter species. They also argue from the habitats of the two species (the root louse and Wooly Aphis), and from the fact that this works on the roots, while the *Sch. lanigera* works on the trunks and branches; that the American species is not identical with the European, and that the latter is unknown in the United States. This article was in great part transferred by Prof. Riley to his first annual report (1869), without any dissent to the views there expressed; but in his third report (1871), as heretofore stated, we find him expressing the opinion that the two species are identical, or at least but varieties of one species, and that the former (*Sch. lanigera*) was imported into Europe from this country, wnich opinion, I believe, he still entertains.

One or two more facts and suggestions, and for the present I will leave the matter with the reader, that he may form his own conclusions.

I have repeatedly seen in the southern part of the State winged individuals among the colonies of the wooly plant-lice on the trunks of apple trees; these I always regarded as belonging to the colonies. They correspond with the description given by the editors of the *Entomologist*, in regard to color, size and wings, but were found upon the trunks and limbs of the trees, and around the collar at the surface of the ground, and may, for aught I know, have been also on the roots, as I did not extend my examination to these. But it is certain they are quite common on the trunks and branches, in the little fissures, breaks and abraded spots in the bark Goureau also states that the European species is found on the branches, trunks and roots of the trees. Verrill's description of the specimens he found in New England, agrees exactly with that of the apple root-lice found by the editors of the *Entomologist*. It appears, therefore to be pretty well settted, that Dr. Fitch was mistaken in reference to where his winged specimens belonged, or that his species differ from the apple-root louse of the West. It has also been pretty clearly demonstrated that the Wooly Aphis of the trunk and branches is the same as that found on the roots. On the other hand, the preponderance of evidence appears to be against the idea of importation from America to Europe.

Dr. Fitch's species may be briefly described as follows: The young larvæ are scarcely 0.04 of an inch long; of an oval form, and pale, dull yellow color. Legs short, robust, and nearly equal in length. The antennæ appear much like a fourth pair of legs, and apparently five-jointed. From the tip of the abdomen is usually seen protruding a white filament of flocculent, cotton-like matter. It is proper to state that in some respects this description differs slightly from the appearance of the larvæ I have examined from the trunk.

Winged individuals.—These are nearly a quarter of an inch long to the tips of the closed wings; body, legs and antennae, coal black; the head and abdomen covered on the back with cottony down. Front wings, transparent and slightly smoky, as though sprinkled with fine dust; veins, black; the third vein is rather more slender than the first, nearly straight, not forked, its basal third abortive; stigma dark, smoky brown, oblong; its opposite sides nearly parallel, abruptly converging to an acute point at each end. Hind wings, clearer; the two discoidal veins, black.

The winged individuals found in Illinois may be briefly described thus: General color, black; antennæ not quite half as long as the body, third joint half as long as the entire antennæ; abdomen, more or less sprinkled with white downy matter. Wings transparent; third discoidal vein forked near the middle, its basal portion obsolete; stigma nearly three times as long as it is wide, pointed at each end, and pale brown. Length to the tips of the closed wings, about one-seventh of an inch.

As it is certain that our Illinois insect infests both root and trunk, we may assume, so far as practical purposes are concerned, that the two supposed species (rejecting Fitch's winged specimens) are identical, and treat them as such.

These minute pests, having reached the roots in a way not yet fully and satisfactorily explained, by their numerous punctures and the extraction of the sap, cause irregular distortions, swellings and knots to

be formed thereon. The effect of this, when the roots are badly infested, especially of young trees and nursery stock, is to cause them to become sickly and finally die. Where they are sufficiently numerous to cover and deform the root of a tree, the root almost invariably rots, then the lice leave it. As a matter of course, the effect produced by these insects on a young tree is much sooner perceived than on those that are older and larger. Prof. Riley found, from some observations made by him on an orchard at St. Louis, that young nursery trees, whose roots were badly infested, diedthe following season, the roots always rotting previous to the death of the tree. He appears also to think this rot can be distinguished from that produced by any other cause, by its being more porous and soft, and approximating the brown mould of a rotting log. Although there is a tendency in the deformities to disappear when the exciting cause is removed, yet where the lice only leave because it is dying, it appears scarcely possible that the deformities should entirely disappear, as the only means of removing them is gone when vitality is wanting; and these, if remaining, would indicate at once the cause of the rot. Most orchardist sare aware, that the work of these insects can generally be detected where they have been working about the collar of the trunk, even after they have disappeared; there is a peculiarity in the appearance of the bark, a roughened or shagreened appearance, it looking as though the thin delicate outer layer of bark or epidermis had been removed. If present, they may easily be recognized by the peculiar bluish white, cottony matter they secrete from their bodies, which is never met with in the case of the common Apple-tree Plant-louse (*Aphis mali*). The same thing is also true in reference to the spots on the trunk and branches which they attack. When they locate on these portions of the tree, they usually, and so far as my observations go, always select as a starting point, some fissure, cut, break or otherwise injured portion of the bark; or if these cannot be found, the wrinkles about the axils or forks of the larger limbs and elsewhere. I noticed some the past summer, in little scattered colonies, on the smaller limbs and even twigs of an apple-tree standing in my yard. If a tree is neglected and allowed to send up sprouts from the base of the trunk, the point where these join the trunk at or below the surface will be found a favorite resort for these insects.

Do they pass from the trunk and branches to the roots? Or, in other words what relation do the two races bear to each other?

Dr. Fitch thinks the parent insect insinuates hereself downward, along the side of the root, at the close of autumn, and there deposits her eggs and perishes; that these eggs hatch in the spring as soon as the gronnd becomes sufficiently warm, and that the colony is continued through the season by the viviparous propagation usual with the aphides; that in the autumn following, winged individuals again appear, and leaving the ground, seek new homes.

So far as the method of propagation is concerned, it has been shown by Dr. W. M. Smith, of New York, that it differs slightly from the true Aphides, in that the young larva produced by the agamic females are inclosed in the thin egg shaped covering heretofore mentioned, from which they have to free themselves in a manner analogous to hatching. The remains of this covering may often be seen attached to the tip of the abdomen, and is doubtless the supposed

cottony secretion alluded to by Dr. Fitch, in his description of the young larvæ. The fact of acquiring wings is, in itself, an evidence that these individuals, are intended by nature to come to the open air with the power to roam and seek new localities. It is supposed by some that those on the trunk and branches remove to the roots as winter approaches. I have strong doubts on this point, unless by "removing," is meant that the mature winged females, which appear among these colonies at the approach of winter, after pairing, deposit their eggs on the roots. Mr. Verrill states, in *The Practical Entomologist*, that he found healthy and active lice, of all sizes, and busily engaged in sucking sap, on the under side of the branches, as late as December 11, after two snow storms and many cold rains and freezing nights. I have now, January 5, 1877, before me on the microscopic slide a larva of this species, just taken from the trunk of an apple tree, which is alive and struggling to escape; yet, as all are aware, we have just experienced one of the coldest spells of weather ever known in this section. It is proper to add that, although a part of the little colony from which this was taken, was living, the larger portion appeared to be dead.

I think it is evident the species may and perhaps often does, pass the entire round of the seasons, and undergo all its changes, on the trunk or branches, without any transfer to the roots. Yet the root may be, and probably is, its normal habitat, and the early winged females led by the mildness of the season to deposit their eggs on the trunks, the colony struggles on against the cold of winter with a remarkable vitality, which the species has acquired from its naturally cold habitat. So far as I am aware, no difference has been discovered between those dwelling on the trunk, and those on the roots, though this point has not been thoroughly studied.

Natural Enemies.—It is probable that the insects which attack the ordinary plant-lice will also attack with equal avidity the Wooly Aphis, especially those individuals found exposed on the trunk and branches; but as special enemies we may mention the following: A minute Chalcis fly (*Eriophilus mali*, Hald). has been described by Halderman as parasitic on the Wooly Aphis. A second insect enemy is the Root-louse Syrphus-fly (*Pipiza radicum*, W&R.,) first detected by Messrs. Walsh and Riley, as feeding on the larvae. The larva of this fly is a footless maggot, about half an inch long, and of a dirty yellow or pale flesh color; spindle-shaped, attenuated in front and somewhat more abruptly lessened behind; the body is marked with transverse ridges. When not extended, its length is only about one-

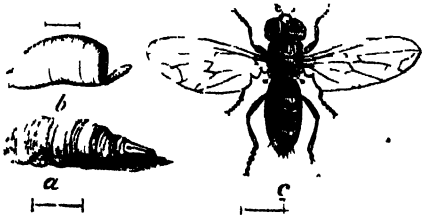


Fig. 20.—Root Louse Syrphus Fly. *a*, Larva, *b*, Pupa, *c*, Perfect Fly.

fourth of an inch. A third enemy is a minute lady-bird, only about one-twentieth of an inch long, and of a deep brown color on the wing-

cases, the thorax being of a lighter color; its scientific name is *Scymnus cervicalis*, Muls. So far as observed, this species has only attacked those lice found on the trunks and branches or at the surface of the ground. I have also noticed a mite very often in the vicinity of the colonies, under circumstances which led me to believe it preyed upon these insects, but have not attempted, as yet, to determine the species.

Remedies.—When a tree ceases to grow with its usual vigor, its leaves becoming paler and more of a yellow hue than customary, and there is no apparent cause for this decline, it will then be well to examine the roots, and see whether or not they are infested by this louse. If found, some one of the following methods for destroying them may be adopted.

First, Dr. Fitch's, which is to clear away the earth from the roots as far as it can conveniently be done, and pour strong soap-suds upon them in sufficient quantity to penetrate and saturate the crevices in the excrescences. The soil taken out should be removed and other soil substituted, or, if returned to its place, ashes should be freely mingled with it. In the nursery, when transplanting or lifting the young trees, if a careful examination, which should always be made, shows any signs of the lice on the roots, they should be dipped in strong soap-suds, which will generally effectually destroy the lice.

Another method, which was long ago practiced by French horticulturists, and strongly recommended by Blot in his celebrated essay on this species, and which has also been recommended in this country by Harris, Walsh and Riley, is to drench the roots of the infested trees with hot water; applying a sufficient quantity to penetrate to all parts of the roots which are attacked. Riley remarks that mulching around the infested trees has been found, by Mr. A. E. Reihl and others, of Alton, to have the effect of bringing the root-lice to the surface of the ground, thus rendering them more easily reached by the water. That mulching or surrounding the collar with rubbish has a tendency to collect these insects at this point is certainly true, at least such appears to be the case so far as my observations have extended, but whether these are from the trunk or roots is a point I have not determined. It was on this account that I recommended mixing ashes or lime with the mulching immediately around the tree.

As to the lice on the trunk and branches, Harris mentions the following methods of destroying them:

Melted resin, mixed with an equal quantity of fish-oil, put on the infested spots, while warm, with a painters brush. Removing the old and rugged bark and scrubbing the trunk and branches with a stiff brush. Applications of spirits of tar, turpentine, urine, kerosene, soft soap, and other similar substances have been recommended.

The same author suggests the following method, which requires too much time and trouble, except now and then in a case of a very valuable tree: "Scrape off all the rough bark of the infested trees and make them perfectly clean and smooth early in the spring; then rub the trunk and limbs with a stiff brush wet with a solution of potash; after which remove the sods and earth around the bottom of the trunks, and with the scraper, brush and alkaline liquor, cleanse that part as far as the roots can be conveniently uncovered. The earth and sod should immediatly be carried away, fresh loam should be placed around

the roots and all cracks and wounds should be filled with grafting cement or clay mortar. Small limbs and infested branches, beyond the reach of the applications, should be cut off and burned."

It is not very difficult to reach and destroy the lice upon the trunks and larger branches, as this can usually be accomplished by an application of strong lye, soap suds etc., put on with a whitewash brush; or what would perhaps be more effectual, kerosene mixed with some other kind of oil. The great difficulty is to reach the insects on the roots, and the failure of all such applications as those above mentioned to counteract the Grape Phylloxéra would indicate, at least, a somewhat similar result in reference to the Apple-root louse, notwithstanding the confidence with which they have been recommended. The hot water remedy is probably the best yet suggested, as it is the simplest, and as effective as either of the others.

Blot was of the oppinion that topical applications were of comparitivly little value, his reliance being placed chiefly on preventive measures, and to this end he recommended the following culture: "Avoid giving to the nursery in which the young trees are, any more shade than absolutely necessary; avoid placing the trees in too flat or humid ground, give to both the nursery and orchard all ventilation possible, so that they may be thoroughly aired, and keep the heads of the trees open, so as to favor circulation of air and the drying of the soil; use the plow frequently, and do not permit rubbish or twigs to remain under the trees; surround each tree with a mixture of soot or tobacco and fine sand."

As a matter of course, the preventive measures by cultivation must depend in part upon the character of the soil If a very sandy soil, the necessity for air and sunshine is not so great as where it is heavy, nor is there the same necessity for repeated plowings. I am of the opinion that in most of the heavy soils of our state, lime might be advantageously used in moderate quantities about the roots of the trees. And in the nursery, lime or ashes might aid in keeping off these insects. These applications, combined with clean culture, will undoubtedly aid very greatly in preventing the occurrence of this pest, and also others almost or quite as troublesome.

I have the following remarks to add to the foregoing article, partly to correct some implied rather than positive errors made therein; and to call attention to a generally received statement in reference to the species which I think needs further investigation before it can be received as conclusive.

I may repeat here my conviction, after a more thorough study of the species and an examination of authorities I did not have at hand at the time the foregoing article was written, that this species was brought to America from Europe, instead of being an American importation into Europe. The determination by Messrs. Walsh and Riley of the identity of the root and trunk species (*A. lanigera*, Hausm and *Pem. pyri*, Fitch) has a strong bearing on this question, and as it appears to me, should have as much and more weight in its decision than any other testimony we have. It shows that the apple is its proper and natural habitat or source of food, and as it is not replaced on the eastern continent by any other allied species, it is almost certain that it came with the apple from the native home of this plant. That it will live on our native crab may be true, but so far as my examina-

tions have extended, it is rarely found upon them, and even prefers the sweeter kinds among the cultivated varieties, at least such appears to be the opinion of Dr. Fitch. Blot says it is confined to the apple, and if placed on any other tree will soon perish. He also adds further, that while it does not attack the flowers, fruit or leaves, but fixes itself upon the bark, *it will penetrate to the roots.* That the root and trunk forms are of the same species, appears to have been long known in Europe.

Its mode of spreading or migrating, and of hibernating have been given again and again by different writers, apparently without any doubt whatever as to the correctness of the statement. The most recent publication of this theory which I have seen, where it is likely to be read by agriculturists and horticulturists, is an article in a late number of the *Rural New-Yorker*, by Mr. B. Pickman Mann, of Cambridge, Mass. The writer gives the history and habits of the species correctly, as found in the books, omitting the discussion of disputed points, as importation, &c. Following out the idea advanced by Prof. Verrill, in an article published in the *Practical Entomologist*, (vol. 1, 1865), he states that the winged females appearing late in the fall, fly from tree to tree, deposit their eggs, which remain over the winter, and are hatched the following spring. Thus the mode of spreading, and the method of passing the winter are given in a single sentence; at least what is supposed to be the general rule. But it is proper to add that Prof. Verrill speaks of finding living specimens in December, and concludes that many of these insects pass the winter in the cracks and crevices of the bark, covered by their cottony secretions.

I allude to these statements not for the purpose of criticising them, but in order to present some reasons for doubting their correctness as to one or two points which are important, when we come to consider the best means of destroying them. I allude especially to the supposition that the oviparous female flies from tree to tree to deposit her eggs for the spring brood As neither Prof. Verrill or Mr. Mann refer to personal observations on this point, I presume it is a theory based upon the known habit of some other species, as the *Aphis mali*, of depositing eggs in the fall to hibernate.

It is now pretty well ascertained, as stated in the introduction to this paper, that the oviparous female of the true Aphides (*Aphidinæ*) is always wingless, and that the winged female is viviparous. It is true that in the *Chermesinæ*, some of the species develope winged oviparous females, and I think it more than probable that the same thing occurs among the gall making species of the sub-family now under consideration, but there are strong reasons to doubt it in reference to the species of *Schizoneura*, whose habits are similar to those of the wooly aphis of the apple-tree. Koch states that the "Altmutter" (colony foundress) of two of the species of this genus are apterous; the Almtutter of one species he describes as winged, but it appears in the spring and is evidently viviparous. Analogy and the facts would therefore lead us to the conclusion that the winged female viviparous.

But there are additional reasons for doubting the correctness of the opinion advanced by Prof. Verrill on this point. One is the fact he states showing their power of enduring cold, which is confirmed by

my own observations mentioned above. I have also to add that during the present winter (1878-9), while preparing this paper, I made an examination of some apple-trees this species was known to infest, as late as January, after one of the coldest spells we have experienced for a number of years. I found them on the trunk in little scattered colonies, in the breaks and injured spots, covered with an unusually heavy coating of cottony substance. Although apparently lifeless, most of them revived on being brought into a warm room. In each of these colonies were from one to five apparently mature individuals, the rest being larvæ; the former were all dead, the latter nearly all living. From these facts we might infer that these little colonies were formed in the latter part of summer, or in the fall, by wingless viviparous females, possibly the dead individuals observed. But, be this as it may, it is evident that they do hibernate otherwise than in the egg state, and so far we have no positive evidence that they pass the winter as eggs, unless the statement copied by Dr. Harris from Knapp and Hausmann, be taken as such. This is as follows: "The eggs of the wooly apple-tree louse are so small as not to be distinguished without a microscope, and are enveloped in a cotton-like substance furnished by the body of the insect. They are deposited in the crotches of the branches and in the chinks of the bark, at or near the surface of the ground, especially if there are suckers springing from the same place. The young, when first hatched, are covered with a very short, fine down, and appear in the spring of the year like specks of mould on the trees." I have so far failed to find eggs during the winter in this cottony substance, although searching carefully for them with a magnifier. But, the statement quoted, corresponds with the idea that the oviparous female is apterous, as the eggs are "enveloped in a cotton-like substance," whereas, the winged female as Prof. Verrill states correctly, has but little down on the body, in fact, is almost naked. An additional fact must also be borne in mind, that neither Knapp or Hausmann were so fortunate as to discover a winged specimen, and so marked was the absence of this form that they concluded they never acquired wings.

Taking all these facts into consideration, I am forced to the conclusion, that the theory advanced by Prof. Verrill and repeated by Mr. Mann, in his communication to the *Rural New Yorker*, that they spread by the oviparous female flying from tree to tree and depositing eggs, is incorrect.

While it is possible that a portion of the broods pass the winter in the egg state, I am of the opinion this is not their normal method.

The winged individuals are undoubtedly chiefly females, and most likely viviparous and very likely do aid in spreading the species by passing to other trees, and depositing living young in favorable localities, but it is not likely that a female wanders much after she commences giving birth to young aphides.

Blot, Hausmann and other early writers on this subject, supposed the species spread, by being blown about by the wind, the cottony substance aiding.

The chief remedies have already been mentioned; and so far as those insects infesting the trunk are concerned, will prove effectal if carefully and properly applied.

SCHIZONEURA RILEYI. Thos. (*Eriosoma ulmi*, Riley). The Wooly Aphis of the Elm-tree.

This species was originally described and named by Prof. Riley, in his first annual report, as *Eriosoma ulmi*, but as this specific name is preoccupied by *Aphis ulmi* of *Linnæus*, which was afterwards transferred to *Eriosoma* by Sir Oswald Mosley, and as the two appear to be distinct, it is necessary to give this another specific name; I have therefore named it after the original describer. It is always preferable where it is possible to do so, to give these insects specific names, which indicate the plant on which they feed, but in this case all the changes possible on the scientific name of the elm have been rung; two species in fact previous to this having received the name of *Aphis ulmi*, the second by Ratzburg, which has since been transferred to *Tetraneura*.

This species, which is quite common in this State, occasionally does considerable injury to the white elms which are planted for shade or ornament. They usually congregate in clusters on the limbs and trunk, causing an unnatural and knotty growth of the wood somewhat similar to the knots produced on the roots of the apple tree by the preceding species. Their habits so far as observed, appear to be very similar to those individuals of *E. lanigera* which inhabit the trunk of the apple-tree.

The description given by Riley is as follows, which I give in his own words, in order to afford the reader an opportunity of comparing it with the description of the *E. ulmi* of Europe.

Color, dark blue; length to the tip of the closed wing, exclusive of the antennæ, 0.12 inch; wings hyaline, three times as long as wide, and more pointed at the end than *E. pyri* (*E. lanigera*). Costal and sub-costal veins, and that bounding the stigma behind, robust and black. Discoidal veins, together with the third forked and stigmal veins, all slender and black, the forked vein being as distinct to its base as are the others, with the fork about one-third as long as the vein itself, and curved in an opposite direction to the stigmal vein. Antennæ, six-jointed, and of the same color as the body; joints 1, 2, 3, 4 and 6 of about equal length, joint 3 thrice as long as either. Legs of the same color as the body. The young lice are narrower and usually lighter color than the mature individuals, varying from flesh or pink to various shades of blue and purple. The cottony or wooly secretion by these lice is very abundant, usually covering them from view, and is very white. They generally appear in May or early part of June, and by the latter part of June or first of July the winged individuals are seen.

Riley says that for these he has found by experiment, that a washing with a weak solution of cresylic soap will kill them all instantly. He also adds that they are preyed upon unmercifully by a species of lace-wing fly, which he names *Chrysopa eriosoma*.

The characters of the *Aphis ulmi*, *Linn.*, *Eriosoma ulmi*, Sir Os. Mosley, are given as follows by Walker: Dull black; antennæ stout, black, moniliform, slightly setaceous, shorter than the body; abdomen

very short, slightly covered with gray filaments; legs moderately long; wings colorless, very much longer than the body; wing-ribs, black; stigma and veins, brown, stigma linear, rather long, actuely angular at each end; distance between the first and second veins at the tips full eight times that between them at the base; third vein nearer to the second towards the base than at the tip, much nearer to the second at the tip than the second is to the first.

SCHIZONEURA PINICOLA. n. sp.

This singular and beautiful specimen was discovered the 20th of April 1878, at Carbondale, Illinois, on the tender shoots of young white Pines, feeding on the base of the young leaves or the sheath around the base of the new growth. Their presence is indicated by slender snow-white, silky webs. They are usually covered with a clear white, cottony secretion which appears to shoot out from the body in little ribbon-like flakes.

Wingless specimen,—when freed from their cottony covering are almost uniformly pale green; before their covering is disturbed, they are covered with a white powdery substance on the back, green dots showing through it along each lateral margin. The form is somewhat elongate-ovate, the head being quite broad and blunt, and in some specimens grooved above near the front; the body is rather rough above, with transverse ridges and tubercles. The antennæ are scarcely half the length of the body, six-jointed, the fourth joint is shorter than the fifth or sixth. Honey-tubes wanting; no tail apparent.

Winged specimen.—Unfortunatly I was unable to examine the winged form when it made its appearance, and can now describe it only from a single specimen mounted in Canada balsam. Body imperfect and somwhat shrunken; the abdomen is less than the thorax; the widest point being the anterior portion of the meso-thorax; the prothorax is very short, it and the head, which is broad, being brought closely together the latter, apparently, somewhat drawn into the former. The eyes are large and black; the front of the head rounded and blunt. The antennæ more than half the length, but not reaching to the tip of the body; third joint longest, nearly, but not quite equal in length to the fourth and fifth united, its inner side with a series of little transverse ridges: fourth, fifth and sixth joints about equal in length; the sixth with a little spur at the end.

Wings erect in repose, anterior pair with the third discoidal vein once forked; posterior pair with two branch veins; unusually delicate and perfectly transparent, so that when placed on a glass slide and held toward the light they can scarcely be traced by a pocket lens, (I speak only of them in the balsam); veins very slender and delicate. The first and second discoidal veins arise very closely together, but diverge rapidly, the second being much more oblique than the first; the third is wholly obsolete at the base about half the distance to the fork; the fourth vein is long, at its base it curves slightly for a short distance, then is nearly straight, running obliquely to the hinder portion

at the apex of the wing. The costal and sub-costal veins are more than usually distant from each other. The stigma is scarcely apparent and is unusual in form, gradually narrowing from its base it curves around the margin of the wing to the apex, in the shape of a sickle, the point being elongate and attenuated.

According to Passerini's arrangement, this will fall into *Schizoneura;* the venation and form of the stigma approaches somewhat closely to Koch's *S. compressa.*

SCHIZONEURA PANICOLA. Thos.

In Bulletin No. 2, of the Ill. State Labratory of Nat. Hist., published in December 1877, I described a new species of root plant-louse as *Tychea panici.* In a note, inserted while the article was going through the press, I announced that what was supposed to be the winged form had been discovered, and that it would probably fall in the genus *Schizoneura.* The connection between the two was not absolutely traced by Mr. Pergande, the discoverer, but the facts were sufficient to cause him to believe they were identical. A more careful examination has sufficed to convince me that in this he was mistaken, at least the differences between the two are such as to require them to be described and considered as distinct.

The winged species to which the name *Schizoneura panicola* has been given, so far as it can be described from recent alcoholic specimens, presents the following characters:

Winged female.—The front wings with the third discoidal vein once forked; third vein obsolete at base; first and second veins arising very near each other; stigma short, rounded behind; fourth vein nearly straight; costal bent outward next to the base, leaving a rather wide space between it and the sub-costal. Antennæ short, reaching about to the base of the front wing; slightly hairy; third joint rather longer than the fourth and fifth united; sixth slightly longer than the fifth, with a very short, indistinct, blunt spur at the tip. Beak rather long, reaching nearly to the hind coxæ, slightly hairy. Eyes present and of the usual size or nearly so.

Wingless female (probably not fully developed). Very broadly ovate and very convex being sub-orbicular; antennæ reaching about to the end of the thorax, rather thick and heavy and not tapering, the apical joints, if any difference, rather thicker than the middle ones; third joint longest but not quite equal to the fourth and fifth united; fifth rather longer than the fourth, gibbous on one side at the tip; sixth nearly as long as the third. Beak, long reaching fully to the hind coxæ. Color of the alcoholic specimens reddish yellow; eyes minute and black.

Found on the roots of *Panicum glabrum* and other grasses by H. Pergande, at St. Louis, Mo., in November.

The difference in the length of the beak will certainly distinguish this from *Tychea panici,* even supposing the antennæ in the latter to be undeveloped.

Passirini in "*Gli Afidi Ital.*" describes a species which may be identical with this. I give his description in full as a means of comparison, and of determining this point.

Schizoneura venusta Pass.

Wingless female—Ovate-convex, pale green or sometimes reddish; head, three anterior dorsal fasciæ, a quadrate discoidal spot, two posterior fasciæ and marginal points, black. Rostrum extending about to the middle legs. Length (of body) 1 mm.

Winged female.—Head and thorax black. Abdomen greenish yellow or reddish; two anterior fasciæ, a sub-rotund discoidal spot and marginal points, black. Nectaries tuberculiform and black. Length 3-4 to 1 mm.

Pupa yellowish, head and thorax pulverulent. Found on roots of *Setaria viridis*, *S. glauca*, *S. italica*, *Panicum glabrum*, *Eragrostis megastachya* and *Ceratochloa australis*, in Autumn.

SCHIZONEURA QUERCI. Fitch. The "Oak Blight," or Wooly Aphis of the Oak.

This species is found in the northern part of this state, upon oak limbs. Fitch says it is very similiar to another species found on the bass-wood.

The winged individuals are black throughout, slightly dusted over with an ash-gray powder.

The fore-wings are clear and transparent; the stigma is dusky, the rib-veins black, and the third discoidal vein with the basal portion abortive nearly or quite to the fork. The length to the tip of the wings is (0.16), a little over one-eight of an inch.

SCHIZONEURA TESSELLATA. Fitch. The Alder Blight.

This species is found on the under side of the branches of the Alder (*Alnus rubra*), crowded together and concealed beneath a covering of snow-white down. Wingless individuals, dull bluish back; the back of the segments are marked with strongly impressed lines, and covered with white down in square, checker like spots. Length to the tip of the abdomen, 0.16 inch.

SCHIZONEURA IMBRICATOR. Fitch. The Beech-tree Blight.

This species occurs on the under side of the branches of the beech, covered with a coating of white down; and, according to Dr. Fitch,

from whose report the discriptions of this, the preceding and following species are copied, when the branch on which they are situated is jarred, a shower of tiny drops of water-like fluid falls from these insects. It is possible it is identical with the European.

SCHIZONEURA FAGI. Linn. Beech Blight.

Black; three last segments of the abdomen, blue pruinose; longitudinal vein, and a line on the middle of the inner margin, black. Winged females have the abdomen yellowish, with a black spot on the disk; legs pale. Larva, pale, with two fuscous dorsal stripes; posterior half of the abdomen covered with a tuft of cottony down, from which proceed two longer and coarser filaments. Length to tip of wings, 0.22 inch.

SCHIZONEURA STROBI. Fitch. Pine-tree Blight.

"Black, pubescent, subpruinose, a dorsal row of white meal-like spots on the tergum; fore wings with the costal margin, the apical and two inner basal nerves, black. Length .20. Common on branches of the White Pine, giving the bark of infested trees a peculiar black appearance. Belongs to a nondescript genus intermediate between this and Lachnus. Male, female." (Fitch).

SCHIZONEURA ULMI. Linn. The Elm-leaf Aphis.

This species is the one so commonly seen congregated in immense numbers on the under side of Elm leaves, cupping and blistering them.

Wingless female. Broadly ovate in outline and very convex. Antennæ short, not reaching the end of the thorax; third joint longest, equal in length to the three following; fourth, fifth and sixth about equal. General color lilac brown; legs and antennæ pale. No honey-tubes. Body tipped with cottony substance.

Winged individuals. Wings erect in repose, transparent, with rather small, dark veins; stigma dusky, fusiform, rather large; their discoidal vein obsolete at base about half the distance to the fork. Antennæ about half the length of the body. General color dark brown, almost black; legs and antennæ black, wings transparent.

SCHIZONEURA? FUNGICOLA. Walsh.

Syn. *Eriosoma fungicola.* Walsh.

Mr. Walsh describes this species, which I have not seen, as follows: "From recent specimens. Body black, with a plum-like bloom; basal half of abdomon and whole of venter yellow. Antennæ and legs black. Wings hyaline with a dusky tinge; veins dusky, black on the basal half of the costa; third discoidal hyaline nearly to its fork; stigma palish brown. Numerous individuals, unaccompanied by larvæ, occurred on a large moist fungus a hundred yards from the nearest trees, which were all oaks. Beat solitary individuals unaccompanied by larvæ or wooly matter, on two separate occasions from oaks, which when dried differ only from the dried specimen of those found on fungus by the metathorax being varied with pale greenish, as well as the base of the abdomen. Lenth to tip of wings .12—.13 inch.

The antennæ do not quite attain the base of the first discoidal when the wings are expanded, and the stigma is rather more than twice as long as wide."

He also discribes a second species which is undoubtly but a variety of *S. fungicola.*

SCHIZONEURA CARYÆ Fitch. Hickory-blight.

Syn. *Eriosoma caryæ* Fitch.

The undersides of the limbs, particularly of bushes and young trees in shaded situations coated over with a white flocculent down, covering and concealing multitudes of wooly plant-lice which are crowded together upon the bark, sucking its juices; the winged individuals of a black color, with the head, scutel and abdomen covered with a white cotton-like substance, their wings somewhat hyaline, the forward pair with an oval salt-white spot or stigma towards the tip of their outer margin; their veins all very faintly traced or abortive. Length to the tip of the wings 0.12.

It was found common upon walnut bushes growing along Henderson river, in Illinois, a few years since. (Fitch).

I have not observed this species in the Southern part of Illinois, though it is very probably found throughout the State.

SCHIZONEURA CORNICOLA. Walsh.

Syn. *Eriosoma cornicola*, Walsh.

Differs from the preceding only in the body being entirely black. Numerous individuals, unaccompanied by any flocculent matter and so

far as I recollect by larvæ, occurred in September on the lower side of the leaves of the red osier dogwood. (Walsh).

Genus GLYPHINA. Koch.

This genus differs from Schizoneura chiefly in the fact that the hind wings have but one branch vein. It may be defined as follows: The beak short; antennæ short, not reaching beyond the tip of the thorax, transversely corrugated; six jointed, the two basal joints very short, the third longest, about or nearly equal to the three following; the sixth joint sometimes very short, while in other cases it equals the fifth. Front wings usually have the third vein once forked, but sometimes the same species varies in this respect and occasionally presents an individual with this vein simple. Hind wings with one oblique or branch vein. Honey-tubes obsolete or wanting.

Mr. Monell's genus *Colopha* must be considered a synonym, unless we consider the slight variation in the length of the sixth joint as a generic character, which does not enter into the diagnosis of his genus. Koch evidently considered the fork of the third discordal vein of the forewing as characteristic of his genus, as he speaks of the simple form observed in *Gl. betulæ* as exceptional and unfortunately figures this exceptional form.

Thalaxes. Westwood. as modified, or rather as explained by Walsh is also a synonym. It is true that Westwood speaks of his species as a synonym of *Vacuna* Heyd, but the number of joints in the antennæ does not appear to have been relied upon as a character, the supposed normal position of the wings, when at rest, being apparently the governing characteristic.

Mr. Monell who makes *Byrsocripta ulmicola*. Fitch, the type of his genus, gives as a character,"wings in repose usually horizontal." As I have elsewhere stated, when first taken from the galls the wings are often seen in a semi-horizontal position, but the appearance, even at this time shows that this is not their normal position, which is evidently erect.

Glyphina ulmicola. Fitch. The Aphis of the Elm-leaf Cockscomb gall.

Syn. *Byrsocrypta ulmicola*. Fitch.
Thelaxes ulmicola. Walsh.
Pemphigus ulmicola. Pack.
Colopha ulmicola. Monell.
Glyphina ulmicola. Thos.

This species forms the cone-shaped galls, so common on the upper side of the leaves of young white elms. These galls, which are often

an inch or more in length, vary in height from one to three-quarters of an inch; they are compressed and grooved on the sides, and perpendicular, showing tooth-like, conical projections at the top: opening by a long slit on the under side. The inside is wrinkled perpendicularly into deep plaits or folds, and occupied by one female and her progeny, some of which may often be seen strolling out on the under side of the leaf

My examinations of these insects show the characters of the species to be as follows·

Winged individual—Length of body about .05 inch, to the tip of the closed wings 08 inch, thorax black; the abdomen dull black or greenish black above; paler, obscure green beneath; slightly pruinose Antennæ very short, scarcely reaching beyond the insertion of the fore-wings; first and second joint very short; third much the longest, about equal in length to the three following taken together, fifth and sixth about equal, all except the basal joints transversely corrugated. Wings transparent, resting somewhat flatly on the abdomen while in the gall, but after the specimens have been removed for a while, will assume the usual erect position, the costal and sub-costal veins dark; the latter robust and undulating; stigma prominent; the first and second dis-

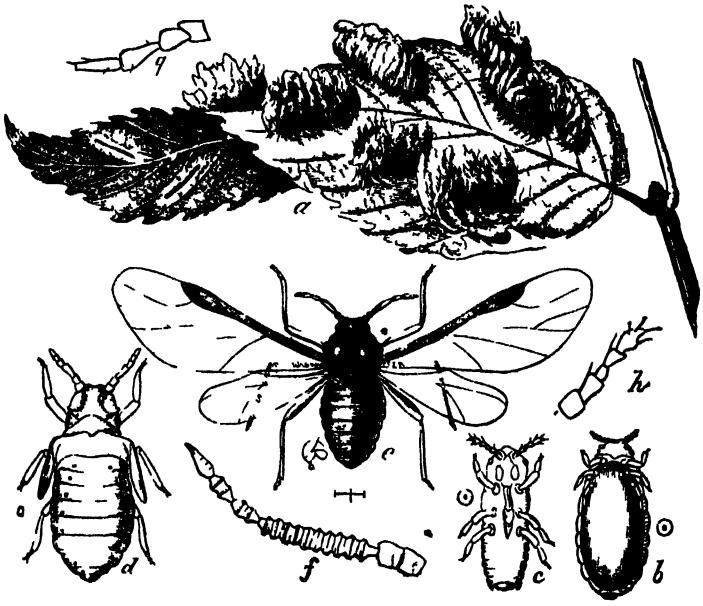


Fig 21—Aphis of the Elm-leaf Cocks-comb Gall—*Glyphina ulmicola:*

a, Leaf showing galls from above and beneath, nat. size *b*, Impregnated egg, surrounded by skin of true female *c*, Newly born young of second generation, ventral view *h*, Its antenna *d*, Pupa of same, dorsal view *e*, Winged female. *f*, Her antenna *g*, Antenna of stem-mother—all enlarged

coidal veins are close together; the third obsolete at base, emits the fork about midway its length (counting to the imaginary point of insertion). No honey-tubes; the abdomen expanding near the tip.

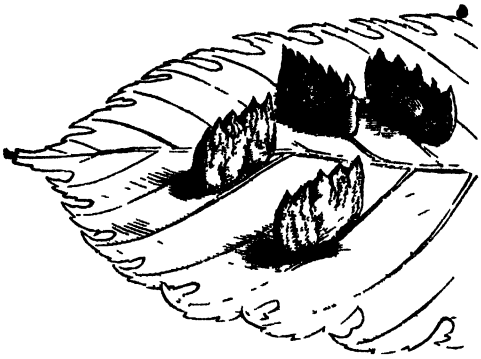


Fig. 22—Elm-leaf Cocks-comb Gall

The *wingless individuals* are very short, broadly ovate, and very convex; olive green, covered slightly with a white powder; antennæ and legs very short.

Mr. Monell calls attention to the errors in the bibliography of this species, in his article in the *Canadian Entomologist*, as follows: "The bibliography of this species really seem, like a 'Comedy of Errors.' Dr. Fitch placed it in a wrong genus; Mr. Walsh removed it to *Thelaxes*, and refers to N. Y. Rep., I, 257, instead of I, 357, The *American Entomologist* omits to index it for p. 224. Mr. Packard (*Guide*, p. 525), mentions *Thelaxes ulmicola*, Walsh, while on the next page he speaks of *Pemphigus ulmicola*, (Fitch), and refers to figure 525, which is from an electrotype of the identical woodcut first published by Messrs. Walsh and Riley, in the *American Entomologist*, under the name *Thelaxes ulmicola*, Fitch. Mr. Packard's figure 525 is, therefore, my *C. ulmicola*, and, indeed, I have so far failed to find any other mention of *Pemphigus ulmicola*. Fitch." But the writer is mistaken in saying that it is not indexed for page 224, in the *American Entomologist*, as it is indexed for this page, under "Cockscomb elm-gall," and "*Thelaxes ulmicola*."

Glyphina eragrostidis. Middleton.

Syn. *Colopha eragrostidis*. Middleton.

Winged individual.—General color reddish-brown; head black; prothorax yellowish, rest of the thorax and abdomen reddish-brown; veins of the wings dark; stigma pale brown.

Wings, when first seen horizontal, but becoming erect, formed and veined as usual; the third vein in the anterior pair with only one fork and obsolete nearly half way to the base of the fork; the first and second veins approximate very closely at the base. Posterior pair with but one discoidal vein.

Antannæ six jointed, with the sutures between the third and fourth and between fifth and sixth transparent; first and second joints short; third about equal to the fourth, fifth and sixth united; the fourth and fifth nearly equal in length: sixth very short, but little exceeding the first and second united. The antennæ, as compared with the body, are very short, scarcely reaching to the base of the front wings; not tapering,

Wingless individual.—Body covered with a cottony substance; beak short, not extending to the base of the second pair of legs. No honey-tubes. Length of the body .06 of an inch; to tip of wings .10 of an inch.

This species was found September 1st, 1877, on the upper leaves and fruit stems of a species of grass (*Eragrostis poæoides* var. *megastachya*), the blades of the grass folding over the insects.

It is also found on some species of *Panicum*.

Genus VACUNA. Heydn.

This genus agrees in most of its characters with *Glyphina*, the third discoidal vein is once forked; the hind wings have but one branch vein. But it differs in having only five-jointed antennæ

I know of no species found in the United States that can with certainity be referred to this genus.

For venation of wings see fig. 21 *e*.

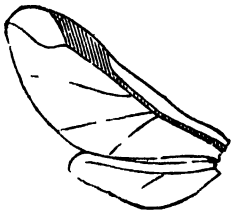
Section 2—PEMPHIGINI.

This section corresponds exactly with Buckton's sub-family *Pemphiginæ*, and is distingished by the following characters:

The front wings have three discoidal veins, all simple; the hind wings have one (Fig. 23, see end of report) or two (Fig. 24) oblique

or branch veins. Antennæ six-jointed. Some of the species which belong to this group, appear to, and according to the authorities we have on the subject, do place their wings horizontally in repose. I have as yet, found no species with this habit, which belongs to this section; as heretofore stated, I have observed gall-inhabiting species with the wings sub-horizontal while in the gall, but assuming the erect position after coming into the open air, hence I conclude the normal position of these organs, in these species, is erect.

FIG 24



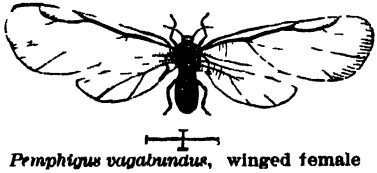
Wings of *Tetraneura ulmi.*

The habits of the species of this section, have already been alluded to.

GENUS PEMPHIGUS. Hartig.

The species have the third discoidal vein of the front wings simple, that is, without any fork or division; the hind wings have two branch veins. (See Figs. 23 and 25.) The antennæ, which are quite short, not extending beyond the end of the thorax, are six-jointed, the third joint longest.

FIG 25



Pemphigus vagabundus, winged female

PEMPHIGUS FRAXINIFOLII n. sp.

Winged Individuals.—Anterior wings with the third discoidal vein simple, arising from the second vein a short distance from the base of the latter, running almost directly outward toward the apex of the wing; second vein also very oblique and arising very close to the first vein; first vein somewhat dim, sub-obsolete, slightly curving outward as it approaches the margin of the wing; fourth vein curves very slightly near the base, the remainder being almost straight. Stigma semi-opaque, elongate-rhomboidal, sides nearly parallel, ends with about the same slope; length about three times the width. Sub-costal vein

quite prominent, somewhat distant from the costa, curving slightly inward or backward where the two branch veins arise. Antennæ short reaching but slightly beyond the end of the thorax; third joint longest, nearly equal to the fourth and fifth; fourth slightly shorter than the sixth; sixth with a small spurs at the tip. Posterior wings with two discoidal veins which arise from the same point. Color of winged specimen after long immersion in alcohol; head dark, prothorax pale, thoracic lobes dark; abdomen palê dull yellow, with marginal sutures dark in some specimens; wings transparent, with a slight tinge of milky white; veins very delicate, and generally pale. Length of body about .07 inch.

Wingless specimen.— Very broadly ovate, length, in some scarcely exceeding the widest point; antennæ very short; eyes quite small; dark.

Dr. Bundy, from whom the specimens were obtained, furnishes the following note in reference to them; made at the time they were discovered.

"On ash, June, Sauk City, Wisconsin. On the under of surface of much deformed, crumpled leaves. Female; abdomen dirty green, somewhat darker at the base, sprinkled with mealy-white grains at the apex; head, throax, eyes, antennæ and legs dingy black; wings pale, unmarked." The particular species of Ash (*Fraxinus*), which it inhabits Dr. Bundy has not informed me.

This can scarcely be the *Aphis fraxini* of Fabricius, which is found on the branches of the European ash, (*Fraxinus excelsioris*). It resembles in some respect, the *Prociphilus bumeliæ*, Schrank, to which Koch, with a mark of doubt, refers *A, fraxini* Fab., but, judging from Koch's figures, it differs from that species as follows: in Schrank's species, the third discoidal vein does not arise from the second, nor does the second approximate very closely at its base to the first, and moreover it is a very large species. The two agree somewhate closely in color and markings, in the obliquity of the third discoidal vein, form of the stigma and curveture ot the subcostal vein, and also in the form of the apterous specimens. It is also more than probable that the alcohol has caused the specimens described to shrink and lessen the size. If it should hereafter be ascertained that this species is from the European ash it will be best to suppress my specific name and consider it as a varity of *Pociphilus bumeliæ*.

Since the above was written, Prof. Bundy has furnished the following item; "Found on *F. quadrangulata*, Mx. Leaves much twisted and deformed, especially at the end of infested twigs, but no gall proper."

Pemphigus rubi. n. sp.

This species, which was first discovered by Prof. G. H. French, at Carbondale, Illinois, in April, 1878, and mounted and described (in *Mss*) by Miss Nettie Middleton, presents some difficulties when we attempt to discover its affinity or locate it strictly according to characters and habits. It is possible that in a rigid classification it would require the

construction of a new genus, yet its external characters appear to be decidedly Pemphigian.

Winged Specimens.—Antennæ very short, not more than three times the length of the head, not reaching quite to the end of the thorax; rather stout; third joint longest, rather longer than the fourth and fifth united; second, fourth and fifth about the same length; sixth about two-thirds the length of the third, with a short blunt spur at the tip; the third joint usually presents about six little transverse wrinkles, or pustules. Anterior wings with the third discoidal vein simple (not forked); very thin and delicate but slightly smoky; veins, with the exception of the sub-costal very slender and pale brown; the subcostal is rather broad and brownish; costa semi-opaque and brown, the first and second discoidal veins arise usually from the same point, but in some the space between them is distinct, first nearly straight, second curving slightly very oblique and diverging; third vein obsolete at the base, (usually) straight; fourth curves slightly at the base, rest straight. Stigma elongate, fading gradually into the subcostal at the base and rounded behind.

The above description is from the mounted specimens, when living, the veins of the wings are dark.

In the hind wings, the sub-costal vein curvers very strongly at the point where the two branch veines arise, so that the second vein appears to form its extension. In one specimen, the second branch vein is distinctly forked; in some cases the two branch veins appear to arise from the same point, in others they are distinctly separated. Beak reaching slightly beyond the base of the middle legs.

No wingless specimens obtained.

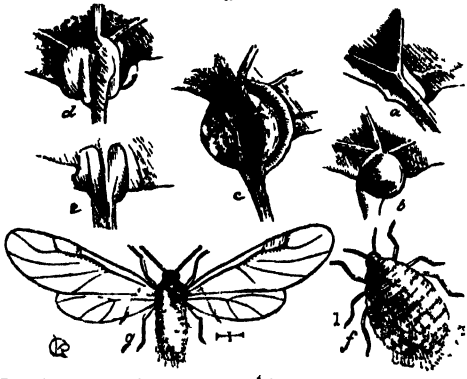
Body apparently black, but covered when living with a bluish-white cottony substance. No honey-tubes.

Size small.

Found on the underside of the leaves of the common raspberry, (*Rubus occidentalis*) along the mid-rib.

It is possible that these specimens were accidently on the raspberry, they closely resemble that found by Profs. Bundy on *Populus tremuloides*, which I have considered provisionally as belonging to *Pemphigus populicaulis*.

Fig 26



The Poplar-leaf Gall louse. *Pemphigus populicaulis.*

a, The incipient gall on the under side of the leaf *b*, The corresponding bulge on the upperside. *c*, The fully formed gall, showing the lips slightly separated, so as to per-

mit the escape of the mature insects. *d* and *e*. Incipient double galls, one being located on each side of the mid-rib *f*. The wingless female, with the cottony secretion attached. *g*. The winged insect. The marks at the sides of *g* and *f* indicate the natural size.

PEMPHIGUS POPULICAULIS, Fitch. The Poplar-leaf Gall-louse.

This species forms the swellings or galls about the size of a bullet, so often seen on the leaves of the cotton-wood (*Populus monilifera*) at the point where the blade joins the stock or petiole. These galls often assume a reddish tint, and sometimes grow to the size of a small marble; having a mouth-like orifice on the under side and a cavity within where the lice reside. As Dr. L. Baron, has given an account of this species in his Third Report, it is unnecessary for me to notice it further than to give a description of the species, which is omitted in that report.

The galls usually begin to appear early in May, and at first are occupied by a single wingless female, which in midsummer becomes the mother of a numerous progeny, often amounting to one-hundred and fifty in number. Dr. L. Baron, is of the opinion, from some observation he made, that they pass the winter in the egg state, and that the eggs are placed at the base of the buds.

The young lice are of a pale greenish or whitish color, variable in size, but usually about three-hundredths of an inch long. The winged individuals make their appearance about the middle of June. These are of a blue black color throughout, sometimes with the base of the abdomen and legs pale brown. While in the gall, the wings appear to rest horizontally on the back, but when they leave this they are held erect in repose, as is usual with the species of this genus; they are whitish and not perfectly clear, being more or less dusted over, as is the body, with a white powder; the marginal vein is robust and blue-black from the base to the stigma, but slender beyond that point; the rib vein is also robust and of the same color till it reaches the stigma, where it is widened to twice its previous thickness, forming a broad blue-black margin along the inner side of the stigma; the stigma is dull white; discoidal veins, pale yellow; the first of these veins is straight, the second arises almost in contact with it, and is straight nearly to its tip, where it curves slightly toward the inner margin; the third vein obsolete for about one-fourth of its length at its base. Length to the tip of the abdomen about one-tenth of an inch; to the tips of the wings, one-seventh of on inch.

Specimens sent to me by Mr. W. F. Bundy, of Sauk City, Wis., were found on the Aspen (*Populus tremuloides*) and are probably the same as the above described. The following is the description taken from alcoholic specimens:

Winged individual.—Front wings with the three simple branch veins very slender and pale, obsolete at the base; fourth vein curves regularly and slightly at the base and before it reaches the apex recurves; stigma rather short, acute angled at the base; posterior margin rounded to the apex, dull yellowish or light brownish with a broad brown posterior or inner margin. Antennæ short scarcely reaching beyond the tip of the thorax, third joint as long or longer than

the fourth and fifth united, sixth joint a little shorter than the third, nearly equal in length to the fourth and fifth united, tipped at the end with a small rudiment of another joint; whole antennæ marked distinctly with transverse ridges. Without honey-tubes. Posterior wings with two branch veins arising from nearly the same point, speaking more exactly the subcostal vein soon after leaving the base apparently divides into three branches, the second branch apparently forming the continuation of the subcostal vein.

The following notes in regard to color were taken by Prof. Bundy from fresh specimens. *Winged female*—General black color, smoky brown on the ventral side of the abdomen, indistinctly striped above with transverse lines. Antennæ and eyes black. Wings dingy white with widened veins, forming conspicuous dark spot near the margins. Honey-tubes white. On petioles, young on under surface of the leaves.

Pemphigus? formicarius. Walsh.

This and the next species are unknown to me, I give Mr. Walsh's descriptions as I find them, and in his own words.

Two kinds of larvæ occurred in company; the first, when recent, scarcely twice as long as wide and whitish; the second, when recent, three times as long as wide and cinereous. From the latter I bred five *winged* individuals, which differed as follows from the description of *P. pyri* Fitch: The size is somewhat smaller; the prothorax and abdomen of the living insect are blue black, pruinose, in the dried specimen pale yellowish-brown, the abdomen much varied with fuscous; the thorax and head, both in the living and dried insect, are opaque blue-black. Legs yellowish-fuscous. Wings hyaline slightly fumose at tip; veins not margined with brown; the second discoidal is not more robust than the first and does not taper; the costa and the anterior half of the stigma are very pale fuscous or cinereous, the latter a little darker; the posterior half of the stigma is black. In the hind wings the apex of the black rib-vein or sub-costal is nearly twice as far from the apex of the second discoidal as that is from the apex of the first discoidal.

Length to tip of wings .2 inch; expanse .33 inch. Five specimens. The stigma is much hunched posteriorly, more acute at the basal than the terminal end, and rather more than twice as long as wide. Bred October 11th, from larvæ found 8 or 10 days before in the nest of *Formica aphidicola* Walsh, attached to the root of what appeared to be a perennial herbaceous plant.

Pemphigus? formicetorum. Walsh.

Differs from *P. pyri* as follows: The size is much smaller; the second discoidal is not more robust than the first and is of uniform robustness throughout; the third discoidal is of equal robustness with

the first; the fourth or stigmal vein is of equal robustness with the first and does not taper; in the hind wing the apex of the second discoidal is nearly twice as far from the apex of the rib-vein as it is from the apex of the first discoidal.

Length to tip of wings .09--12 inch; expanse .20--.25 inch. The stigma is three times as long as wide, very acute at the basal end, and not materially wider than the costa. Found winged specimens May 25th, in company with many larvæ and pupæ, and obtained others in the course of June, all in the nest of the same yellow ant before mentioned. A specimen of the wooly secretion of the larvæ which I have preserved appears under the lens like cotton wool, but at least ten times as fine and snowy white.

Pemphigus pseudobyrsa. Walsh.

Syn. *Byrsocrypta pseudobyrsa.* Walsh.

Pale obscure greenish, pruinose. Antennæ sometimes obfuscated, always with the 6th joint unguiculate. Thorax blackish pruinose. Joints of abdomen with obscure fuscous fasciæ. Legs with the tarsi, and sometimes the tip of the femora, obfuscated. Wings whitish subopaque, costa and stigma yellowish; veins hyaline except the costals which are pale yellowish-brown, the subcostal generally blackish at base and black at the stigma but not thickened there. Hind wings with all the veins hyaline. Length to tip of wings .10-13 inch.

The antennæ scarcely attain the base of the 1st discoidal of the expanded wing, and the stigma is about three times as long as wide and very acutely pointed at its basal end. Forms near the middle of the midrib of the leaf of the cotton-wood (*Populus angulata*) what appears above as a smooth, green, semicircular, compressed gall; crowned by the midrib and from one quarter to two fifths of an inch long, but which below is entirely open, the sides of the leaf bending down together so as to touch each other and conceal the opening. The insects oten wander from this false gall and associate with *Aphis populifoliae* Fitch. Comes very near *popularia* Fitch, (the gall of which is unknown) but that species has the discoidals "blackish" and the "antennæ only two-thirds the distance to the wing-sockets." Differs from *populi globuli* and *populivenae* Fitch in the sub-costal not being thickened at the stigma and also in the peculiar structure of its gall.

The recent larva is densely covered with white pruinescence, on removing which it is yellowish, with only the eyes and tarsi blackish, and the disk of the abdomen freckled with reddish (Walsh).

Pemphigus vagabundus. Walsh. The Vagabond Gall-louse.

Syn. *Byrsocrypta vagabunda* Walsh.

This species produces a rather large, irregular gall on the tips of of the twigs of certain cotton-woods, and also occasionally on balsam

poplars, which somewhat resemble the flower of the double cockscomb of our gardens. These galls turn black in winter, giving the

Fig. 27.

Gall of Pemphigus vagabundus

tree a singular and rather unsightly appearance after the leaves have fallen off. The winged insect generally makes its appearance in September; (Vagabond Gall-louse. Fig. 25) the body is black, and about one tenth of an inch long; the expanded wings measure rather more than one-third of an inch from tip to tip; antennæ six-jointed. The name *vagabundus*, or vagabond, has been given to it on acount of its habit of wandering to a great distance from its place of birth. It is possible as has been suggested, that Dr. Fitch's winged specimens, described as *P. pyri*, belonged to this species.

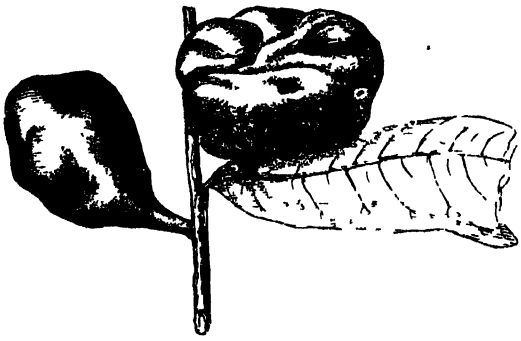
The original description by Mr. Walsh, is as follows: "Black, polished, with no appearance of pruinescence. Antennæ and legs dull fuscous. Abdomen and venter obscure opaque yellowish, varied with fuscous or sometimes with brown. Wings subhyaline with a whitish tinge, costal and subcostal veins, and one-third of the inner edge of the wing from the tip of the first discoidal to the base of the wings, conspicuously fuscous; the remaining veins in both wings whitish hyaline; costal slightly tinged with brown, stigma pale fuscous brown, its interior vein thickened. Alar expanse .43–51 inch." "Sixth joint of the antenna is two thirds as long as fourth and fifth put together; and the stigma is 3½ times as long as wide, very acutely pointed at both ends. There are four specimens which have a little white pruinescence still attached to their wings. Occurs very abuudantly on various forest trees in September."

Pemphigus rhois. Fitch. The Sumac Gall Plant-louse.

This species forms tomato-shaped galls on the leaves of different kinds of sumac, which usually arise from the mid-vein at or near the

base. The shell of these galls is very thin and the winged lice are found inside, in large numbers in September. The winged individuals

Fig. 23.



Gall of *Pemphigus thoia*

have the veins of the wings arranged as in the preceding, but they are much smaller, and the antennæ are only four-jointed.

PEMPHIGUS ULMI-FUSUS. Walsh. The Red Elm Gall-louse.

This is a very minute species, which forms a solitary, spindle-shaped gall about an inch long, upon the upper surface of the leaves of the red elm. The winged individuals measure only about one fourteenth (0.07) of an inch to the tips of the wings, and are of a uniform dusky color. An occasional specimen has the third vein partially or fully forked, as in *Eriosoma*, thereby indicating a close relationship to that genus.

PEMPHIGUS POPULARIA, Fitch. Poplar Gall-louse.

A species noticed by Dr. Fitch, wandering up and down the trunk of the balsam poplar, whose habits are yet unknown. It closely resembles the preceding, but its abdomen is green; its antennæ quite short, reaching but two-thirds the distance to the insertions of the wings; the rib vein not widened along the stigma; length to the tip of the wings about one eighth of an inch. Color black, slightly dusted over with a white powder; the abdomen dull green, with a coating of white flocculent down; sides parallel; wings dull hyaline; the rib-vein black.

PEMPHIGUS POPULI-GLOBULI, Fitch. The Poplar-bullet Gall-louse.

This species produces a green gall about the size of a bullet, globular in shape, on the leaves of the balsam poplar. These galls are situated slightly above the base of the leaf, projecting from the upper surface,

with a curved orifice or mouth on the under side; within these reside the lice, some of which are pale green, others very small and dusky, the larger winged ones of a black color. These are found in this condition in July. The winged individuals differ from *P. popularia* as follows: They are uniformly smaller, wings clearer and veins more slender and colorless, except the marginal vein, which is black to the stigma; the abortive basal third of the third vein is traced by a very slender line, which appears to be more distinct than in any of the allied species; the abdomen is dusted over with a white powder, with a black band on the hind part of each segment. Length to the tip of the abdomen 0.07 of an inch; to the tip of the wings 0.11 of an inch.

The gall which this species produces grows from the mid-rib of the leaf slightly above the junction of the blade with the petiole. It grows either wholly on the upper side of the leaf, or with but a small portion protruding from the under side. The winged individuals according to Dr. Fitch are females, which produce eggs of a dull wax color, the eyes of the enclosed larva appearing like two black dots near one end. These eggs hatch in a few moments after they are deposited. The so called eggs of Dr. Fitch, are doubtless the thin egg-like sacks which we have heretofore mentioned, in which the larvæ are enclosed; hence, this method of reproduction must properly be classed as viviparous, or, perhaps more correctly ovo-viviparous.

PEMPHIGUS POPULI-VENÆ. Fitch. The Poplar-vein Gall louse.

This species forms an oblong, compressed, cockscomb shaped gall, on the mid-veins of the leaves of the balsam poplar. These are situated on the upper side of the leaf, with an orifice which opens on the under side; they are of a light red color, varied with yellow. The cavity within as in the others, contains a number of lice. These galls are nearly semi-circular, and half as high as they are long, being usually over half an inch in length, with an uneven surface; their walls thick and britle. They are generally placed near the base of the leaf, though sometimes in its middle.

The following is a description of the species as given by Dr. Fitch:

The female larvæ are dusky on the body and legs; and are quite small, measuring about 0.25 of an inch in length; straight along each side and slightly narrowing from behind forward. The male larvæ are much less numerous, and double their size; are pale dull green with whitish antennæ and feet.

The adult wingless female is as broad as long, measuring from 0.04 to 0.05 of an inch in length, the hind end usually being concave or notched, and the abdomen elevated or humped in the middle; pale dusky with two rows of snow white dots, formed of white powdery matter, along each side of the back, the dots of the inner row being more numerous than those of the outer row; head dark, legs dull yellow and feet dusky.

The winged individuals black, with coarse thread-like antennæ, reaching to the base of the wings. The wings are pellucid and color-

less, as are the oblique or discoidal veins; the rib-vein blackish somewhat enlarged along the inner margin of the stigma; marginal vein blackish. Length to the tip of the abdomen, 0.05 inch; to the tips of the wings 0.08 inch.

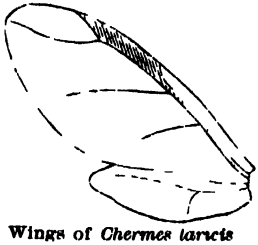
SUB-FAM. CHERMESINÆ.

As I have not had an opportunity of examining sufficient material either of this or the following sub-family, I shall make no attempt to define them strictly, nor to do more than give the brief descriptions I find in the works of other authors, and add the descriptions of some two or three specimens I have discovered.

As indicated in the synoptical table of the sub-families, this group may be distinguished by the following characteristics:

The front wings, with but two discoidal veins, both simple, the third vein wanting. The fourth or stigmatic vein is usually long, and appears as a third discoidal vein. (Fig, 20.) But the venation is not regular. The hind wings sometimes have a single branch vein, but in many species this is abreviated, or entirely absent. Antennæ never more than five-jointed, in *Phylloxera* they are only three-jointed; short. So far as the species have been studied, they have been found to be oviparous.

FIG. 20



Wings of *Chermes laricis*

GENUS CHERMES. Linn.

Antennæ very short, reaching but little beyond the neck when turned back; composed of five joints, the two basal joints short, the remaining ones generally sub-equal in length, the fifth oval. Front wings rather large, transparent, the two discoidal and stigmatic veins

appearing as three oblique branch veins; stigma usually elongated and much pointed at the tip. Hind wings with one, more or less distinct, branch vein.

Legs in the winged individuals, rather short, the posterior pair, usually not longer than the middle pair; all rather short; in the aptirous individual very short. Body of the winged individual regularly oval; of the apterous nearly circular and convex. No honey-tubes. Usually more or less covered with a cottony secretion.

The species so far as observed appear to be more particularly confiived to to coniferous trees.

Chermes pinifoliæ, Fitch.

This genus as understood by Dr. Fitch, appears to include those species in which the female is oviparous, but does not extrude her eggs; but clinging to the leaf, the abdomen swells and finally she perishes, leaving the mass of eggs adhering to the leaf, thus showing a close relation to the Coccidæ, or bark-lice. But on the other hand, the winged individuals possess four wings instead of two, which character places them among the Aphides. The other characteristics will be found in the following specific characters of this species. The winged individuals, black, 0.08 inch in length to the tip of the abdomen, 0.12 inch to the tips of the wings; abdomen, dusky red and slightly covered with down; the wings, dusky and grayish; the rib-vein of the fore wings runs straight to the outer margin forward of the tip, and gives off from its middle, on the outer side, a very oblique branch which runs to the outer margin, its tip producing a slight, angular projection of the margin; on the inner side of the rib-vein there are three branches or discoidal veins, all simple, the third running to the tip of the wing. The hind wings have an angular point on the outer or front margin; the rib vein sending off one branch; antennæ short, thread-like, and four or five jointed.

Found during the summer, stationary upon pine leaves.

Chermes laricifoliæ. Fitch. The Larch Chermes.

Similar to the preceding species; but found on the leaves of the American larch or tamarack. Shining black, 0.10 of an inch long; abdomen dark green; legs pale or whitish; wings nearly hyaline, with pale brown veins; the large stigma opaque and pale green.

chermes (abieticolens?

Adelges of the Spruce. Packard.

A rather large species mentioned by Dr. Packard as "found in abundance on the Spruce in Maine, where it produces swellings at the

ends of the twigs, resembling, in size and form, the cones of the same tree."

Fig. 30

Adelges of the Spruce

The specific name is applied provisionally and only for use in this report. This is certainly distinct from the European species *Ch. abietis* Linn., which is much smaller, of a bright reddish brown color, with the wings tinged with green.

Genus, PHYLLOXERA. Fonscol.

This genus which has recently been brought into such prominence, on account of the injury done to the grape vines by one of its species may be characterized as follows: Antennæ three jointed, the third or terminal joint being much the longest; length usually about one-fourth or one-third the length of the body. Wings large in proportion to the size of the body; overlapping and lying flat upon the abdomen in repose; anterior pair with three oblique veins in the typical form, though the venation is more variable than in the preceding genus. The first and second veins are often united so that the second appears to be but a fork or branch of the first; the third, which in reality represents the stigmatic, is always simple when present, but it is sometimes abbreviated, and sometimes wanting. Posterior wings with an angulated projection on the anterior margin; the branch or discoidal veins usually wanting, leaving but the single rib-vein. Always oviparous, the agamic females never producing living larvæ. Most of the species form galls on plants, usually trees, selecting the leaves; some also attack the roots of the plants on which they form galls.

The young larvæ have the tarsi, but one-jointed.

This genus, like the rest of the sub-family to which it belongs, is without honey-tubes.

PHYLLOXERA VITIFOLIAE, Fitch. The Grape Phylloxera.

Syn. *Pemphigus vitifoliæ.* Fitch.
Byrsocrypta vitifoliæ. Walsh.
Phylloxera vastatrix. Planch.
Rhizaphis vastatrix. Planch.
Peritymbia vitisana West.
Dactylosphera vitifoliæ. Shimer.

This is the too well known species which has done so much damage of recent years to the vineyards, both of this country and Europe. I have retained the specific name *vitifoliæ* given by Dr. Fitch as it has undisputed precedence in date, and there can be no valid reason urged why it should be discarded for a more recent one. That it ought to have been written *vitifolii* or vitis-folii, may be true, but names with the termination *foliæ* have been too long received for this to be a valid objection in this case. If the law of priority is to apply I cannot see why this case should be an exception, I have therefore restored the proper name which the future, in justice to our noted American Entomologist Dr. Fitch, will adopt in spite of present usage of *vastatrix.*

This species has been so thoroughly written up in this country by Prof. Riley and Dr. Shimer that it is unnecessary for me to add any thing farther here than a brief description of the species and its gall, and the conclusion reached as to the best remedy.

This species produces numerous rough galls on the underside of grape leaves, opening on the upper side of the leaf. The gall is usually in the form of a roughened wart, without pedicel, green, but sometimes tinged with red or roseate; the minute opening on the upper side of the leaf is marked by a branch of minute hairs. The inside is clean, or free from any powdery substance. They vary in size, the largest being about the size of a pea: they are often so numerous as to cover the under surface of the leaf.

The winged female is of a light yellow; the thorax sometimes marked with a dark band; wings hyaline; the two discoidal veins uniting so that the second appears as a branch of the first; the third (or stigmatic vein) sometimes distinct and sometimes sub-obsolete, in some of the forms of this polymorphic species it unites at base with the other two.

Apterous individual, light yellow, convex.

Length of the winged to the tip of wings about .07 inch; the wings about twice the length of the body.

For a more complete account of this species, its history, habits etc., the reader is referred to works of Professor Riley, Dr. Shimer and Mr. Walsh. As I have nothing new to add, it is unnecessary that I should introduce here what is so generally known.

The following *resume* of the results of the experiments tried under the supervision of the Academy of Sciences, of France, upon this species is copied from *Nature*, No. 375, January 4, 1877.

"Some time ago we published in our columns a short account of the result of the investigations of various scientific men in France into the nature of the Phylloxera—that terrible scourge which is committing such wide-spread ravages among the French vineyards.

"Laterally we have received some reports, communicated to the French Academy of Sciences, dealing with the attempts which have been made during the last three or four years to arrest the mischief done by the insect, and ultimately to destroy it altogether, by means of some potent drug. It is obvious that the remedy to be employed must possess two qualities at starting, viz: It must destroy the insect, and it must not damage, to any great extent, the vine. But, further, it is not sufficient that when put in close contact with the roots of a plant—as in a pot—it should prove fatal to the insect; it is necessary, if the remedy is to be of real practical value, that it should reach and destroy the Phylloxera on all the parts attacked by it in vines which are planted out in the open air. This is a real difficulty to overcome, as the remedy, be it in the form of solution or of vapor, cannot easily permeate the soil, sometimes clayey, sometimes sandy, on which the vine is growing, so as to reach and act upon the smaller root branches, whose nutrition the Phylloxera diverts into itself.

"M. Mouillefert, a professor at the School of Agricultural at Grignon, was the gentleman delegated by the Academy of Science to make the necessary experiments for the purpose of determining what agent was the most practically applicable to the destruction of the Phylloxera; and the account of the numerous substances employed by him, with varying results, fills no less than two-hundred pages of a memorial presented to the Academy of Sciences. It is not our intention here to give more than a brief *resume* of the results at which he arrived.

"He divides the substances used by him into seven groups, the first of which was composed of manures of various kinds such as guano, super-phosphates, farm muck, etc; the second of neutral substances, as water, soot and sand; the third of alkalies, as ammonia and soda; the fourth, of saline products, among which were the sulphates of iron, copper, zinc, potassium and ammonia, alum and sea salt; the fifth of vegetable essences and products, as decoctions of hemp, datura, absinthe, valerian and tobacco; the sixth, of empyreumatic products; and the seventh of sulphur compounds. It was with some of the substances contained in this last group that really satisfactory results were obtained; and it is to M. Dumas, the Permanent Secretary of the French Academy of Sciences, that the credit is due for suggesting the employment of the alkaline sulpho-carbonates of potassium and sodium, and those of barium. All the other classes of remedies mentioned above were either without effect on the Phylloxera, or in destroying it, also destroyed or damaged the vine.

"The sulpho-carbonates, which were carefully studied by the great Sweedish chemist, Berzelius, are obtained by combining the alkaline monosulphides with the bi-sulphide of carbon, are either liquid or solid, and emit a powerful odor of sulphuretted hydrogen and bi-sulphide of carbon."

"The alkaline sulpho-carbonates, in the solid state, are of beautiful reddish yellow color and deliquescent, but are not easily obtainable in that condition; the sulpho-carbonate of barium can be easily produced, however, in a solid state, and presents the appearance of a yellow powder, but little soluble in water. The sulpho-carbonates decompose under the influence of carbonic acid, forming a carbonate, and evolving sulphuretted hydrogen and bi-sulphide of carbon. These two latter substances are gradually liberated, and as they have a very powerful effect on the Phylloxera, one can understand that the sulpho-

carbonate, place in the ground, may prove, by its slow decomposition, a powerful insecticide.

In the case of the sulpho-carbonate of potassium, over and above its toxic effect, it has a direct invigorating influence upon the vine, as the corbonate of potassium is an excellent manure.

"The employment of the sulpho-corbonates as a means for the destruction of the Phylloxera was suggested to M. Dumas by the clearly recognized need that there was for some substance that would evaporate less quickly than the bisulphide of carbon; he saw that it was necessary to apply the insecticides in some combination which would fix them and only allow them to evaporate gradually, so that their action might continue long enough in any one place to infect with their vapors all the surrounding soil.

"But the task of eradicating the Phylloxera has by no means been accomplished by the mere discovery of the value for the purpose of these substances; there is the further difficulty of applying them to the vine in cultivation. One thing seems very certain, that in order to render the sulpho carbonates available they should be reduced to a powder and spread over the ground before the heavy rains, that is between October and March, which will probably prove very efficacious.

"The conclusion as M. Mouillfert arrives at the end of the report, is that the efficiency of the sulpho-carbonates is proved, and all that is necessary is to bring to perfection their employment in agriculture, which can only be accomplished by the intelligence and practical knowledge of the vine-grower, who is well able to discover the economic processes of culture which are conducive to their successful application.

"He ends by saying that science has accomplished its mission, and it remains for Agriculture to fulfill its part in the eradiction of the Phylloxera from the vineyards of France."

Notwithstanding the confidence here expressed by the distinguished scientists who conducted these experiments, subsequent facts indicate that the problem is really no nearer solution practically now than before these experiments were tried, except that the list of negatives is increased.

The disease appears to be spreading in Europe and no more under control now than before.

The true solution, so far as France is concerned I think will never be found in topical applications, but in an entire revolution in the horticulture of the vine growing districts. In other words an entire destruction of the veins and the adoption of some other culture for a number of years.

PHYLLOXERA CARYÆCAULIS. Fitch.

Syn. *Pemphigus caryæcaulis.* Hickory Gall Aphis.

Wingless females, of which one is found in each gall, she being the parent of the multitude of larvæ around her, measures 0.04 in length,

or somewhat more. She is of a plump egg shaped form, narrower posteriorly and flattened on the under side. The segments of the abdomen are much longer than those of the thorax, and are separated by impressed lines. The legs are short, scarcely projecting beyond the outer margin, and with the antennæ are blackish, the general color of the body being yellow, often of a dull or dirty tinge.

The *larvæ* which occur in walnut galls are of different sizes, the largest being 0.025 long, of an oval form and a light yellow or yellowish green color, with dusky legs and antennæ. Younger individuals are white, shining and somewhat hyaline, with pellucid white legs. The antennæ are short and robust, consisting of two short, thick basal joints and a longer terminal one of a conical form, and giving off a short bristle on one side near the tip. The legs are also short and thick.

The *galls* are globular in form and of different sizes, from that of a pea to an ounce ball, and are attached to the side of the stem the whole length of their base, often causing a bend or distortion of the stem, especially when two or three are contiguous and confluent, as they frequently are. The walls of the gall are about the tenth of an inch in thickness, and of a succulent, fleshy texture, white upon the inside and green on the outside at first, but soon becoming discolored with black, which spreads until the whole is of this color. The hollow inside has its surface covered with minute smooth shining lice of different ages and sizes, so that it resembles the geode of a mineral, the surface of which is lined with a multitude of minute crystals, whose sparkling points are everywhere glittering in the light. Numerous dusky specks are also observed among the lice. These are the cast skins of the lice, all of which moult as they increase in size, their original skins becoming too small to contain them, and being of too firm a texture to expand with the growth of the insect. (Fitch).

PHYLLOXERA CARYÆFOLIÆ. Fitch. Hickory-leaf Witherer.

Forming small conical elevations on the upper surface of the leaf, each having an orifice in its summit; a very small black plant louse with a pale abdomen and legs and smoky wings laid flat upon its back, and having only three veins in addition to the rib. Length 0.06.

The winged lice may be found wandering about upon the surface of the leaf, having escaped through a small orifice at the apex of the gall; the young are found crowded together inside the gall covering the walls of the cavity, they are of a pale yellow color with only a dusky band between the bases of their wings. As soon as they leave the gall they change to a black color, the abdomen only remaining pale yellow often tinged with green. Their legs are short and pale with black knees and feet. The antennæ are short thick and thread-like, scarcely longer than the head, and with but three or four joints difficult to discern.

The wings are placed horizontally upon the back and not elevated

as in most of the plant-lice. They are smoky-transparent with a more dusky spot or stigma on the outer margin between the tip of the rib-vein and the outer edge, the rib-vein being perfectly straight and not curved as in the other plant lice to give a greater width to this stigma spot. In addition to the rib-vein the fore wings have only three oblique veins, all of which are straight and black. The first of these is placed forward of the middle of the wing and runs from the rib-vein to the inner margin. The last one runs from the stigma to the tip of the wing and is abortive or imperceptible at its base where it starts from the stigma. The middle vein is parallel with this last and starts from the first vein above its middle and reaches the inner margin equidistant from the tips of the other two, its base being abortive for a short distance. The hind wings form a very conpicious angular point on the middle of their outer margin and have a longitudinal rib-vein but are wholly destitute of any oblique vein running from it to the inner margin. (Fitch).

Found on the leaves of the shag-bark hickory (*Carya alba*).

PHYLLOXERA CARYÆVENÆ. Fitch.

Syn. *Pemphigus caryævenæ*. Fitch. Hickory-vein Gall-louse.

Forming plaits in the veins of the leaves, which project up from the surface in an abruptly elevated keel-like ridge upon the upper side of the leaf and with a mouth opening on the under side, the lips of which are woolly and closed.

Although the aphis which produces these plaits in veins of the leaves is unknown to us in its winged state, its work will suffice to distinguish it from other species. The plaits occur mostly near the middle of the leaf, upon one side of the mid-vein occupying the bases of the lateral veins, two or three of which are commonly enlarged into the excrescences or galls, which put up in keel-like ridges from a quarter to a half inch in length. These ridges are of a pale yellow color, turning brown and becoming dry and dead after a time, frequently before they perish the portion of the leaf between them withers and turns brown, in which case the inhabitants of the gall forsake it, being no longer able to obtain a due supply of nourishment from its walls. The lips of the mouth which opens on the under side of the leaf are covered with white or pale tawny yellow wool. They are pressed together, but a small orifice is open at their outer end through which some of the young lice frequently crawl from the interior of the gall and station themselves upon the under surface of the leaf by the side of the mid vein. The lips are readily drawn apart, exposing the cavity within, the walls of which are covered with minute wingless, females and their eggs and young. The females are egg-shaped, broadest anteriorly and tapering behind to an acute but not an attenuated point. They are 0.03 long, 0.02 broad, very pale yellow and at the tip watery white. The eyes appear like two minute brown dots widely separated, the head being short and broad with the transverse sutures between it and the other segments of the body very slight and indistinct. The legs and antennæ are short,and tinged with

dusky the antennæ are three-jointed, the basal joint thickest and about as broad as long, the second joint globular and the third elongated and cylindrical, with a projecting point upon one side at the tip. When moving about, the antennæ appear to be employed as a fourth pair of legs, their points being pressed to the surface over which it is passing similar to the feet. The eggs are small oval shining grains of a watery yellowish white color. The young larvæ are intermediate in size between the eggs and the females, and resemble the latter except that they are of an oval form and their beaks are proportionally longer reaching to or slightly beyond the tips of their bodies.

These excrescences are common upon hickory leaves throughout the summer season.

PHYLLOXERA CARYÆ-GLOBOSA. Shimer.

Syn. *Dactylosphæra globosum.* Shimer.

Winged female—Abdomen and prothorax orange yellow; mesothorax, head and eyes blackish; legs and antennæ dark cinereous. Wings hyaline, broad, somewhat overlapping as they lie horizontally on the back. Anterior wing evenly rounded on the posterior margin; anterior margin rather straight, somewhat curved, convex at the middle of the stigma, apex quite broadly rounded, the wide wedge shaped base not extending beyond the middle; stigmatic nervure nearly straight, terminating in the center of the apex, not visible at either end. The discoidal within the middle of the wing not visible at its outer end, somewhat convex anteriorly, its branch hyaline at its extremities; stigma honey-yellow, darkest on the costal margin, the apical end lanceolate; inwardly extending to the base of the wing, all the costal space being of the same color. Posterior wing, one longitudinal vein and no discoidal, Tibiæ and tarsi with a few scattering hairs; claws palish horn-colored, with blackish tips. Length to tip of wings .07 inch; body about .025 inch long.

Wingless female—much resembling the grape leaf louse, *Phylloxera vitifoliae*, but smaller, the dull, pointed promuscis blackish at the extremity.

The following list of these species of this genus is from Prof. Riley's Seventh Report.

PHYLLOXERA RILEYI Licht. The Oak-leaf Phylloxera,

Living on the under side of the leaves and hibernating on the stems of the white, swamp-white and iron oaks, (*Quercus alba, bicolor* and *obtusiloba*).

P. caryae-semen, Walsh.

Forming fuscous, minute, sub-globular, seed-like galls on the upper side of the leaves of the pignut hickory (*Carya glabra*) which open in a small nipple on the underside.

P. caryæ-globuli, Walsh.

Forming hemispherical galls, about the fourth of an inch in diameter on the upper surface of the leaves of *Carya glabra* and *alba*; the galls rather flat below, where they open with a slit.

P. spinosa, Shimer.

Forming large, irregular galls, covered with spines, on the petioles of the leaves of *carya amara* (bitternut hickory), the galls opening beneath with an irregular sinuate slit.

P. caryae-septa Shimer.

Forming flattened galls with a septum, on the leaves of *carya alba*, which open both above and below.

P. forcata, Shimer.

Forming galls similar to those formed by *P. caryae semen*, but larger.

P. depressa, Shimer.

Forming depressed galls on the leaves of *carya alba*, which open below with a restricted mouth fringed with filaments.

P. cornica, Shimer.

Forming galls similar to the last, but without fringe.

P. carya-gummosa, Riley.

Forming pedunculated, ovoid or globular galls on the under side of the leaves of the *carya alba*; the gall white pubecent and gummy or sticky, opening below in a fibrous point.

P. carya-ren, Riley.

Forming numerous more or less confluent, mostly reniform galls on the petiole of *carya alba*; green, densely pubescent and opening with a slit the whole of their length and transversely to the axis of the petiole.

P. carya-fallax, Walsh

Forming conical galls thickly crowded on the upper surface of the leaves of *carya alba*. Strongly resembling *P. caryæfolia*, but the height one-third greater than the basal diameter, and opening below instead of above, in a circular, fuzzy mouth.

P. castaneae Hald.

This is the *Chermes castaneae* of Haldemann, which Riley says is undoubtedly a Phylloxera; although I have not seen the description, I presume, from the name, that it infests the chestnut.

Sub-family. RHIZOBINÆ

This sub-family as here arranged is necessarily artificial as it is based chiefly on the supposed permanently wingless condition of the species, and their habit of residing in the ground and feeding on the

roots of plants. But it is more than probable that when the life history of the species is traced, it will be found that many of them produce winged individuals. In fact it may ultimately be found that no species is permanently apterous.

So far but few species of this group have been determined in this country, and these have been assigned to two genera, *Rhizobius* and *Tychea*, but the characters by which the genera and species are distinguished are so slight and uncertain that no great reliance is to be placed upon them except where the species have been observed with sufficient care to ascertain positively the adult state, and the habits.

So far as my observations have extended the species, do not appear to be confined so rigidly to a given species or genus of plants as is the case with aerial species. This fact also adds to the difficulty of determining species.

GENUS RHIZOBIUS. Burm.

As I have no means of access at present to the original diagnosis of this genus by Burmiester I can only define it from the statements of others and from the species assigned to it. The characters by which it is distinguished by recent authors are as follows:

Species apterous, at least so far known; subterranean, residing only on the roots of plants. Antennæ very short, and according to Passerini six-jointed, according to Fitch, five (?) or six-jointed; but a species described below which I am pretty well satisfied belongs to this genus has these organs apparently seven-jointed, but the division between the third and fourth is not distinct; the joints are sub-equal, the third not obviously longer than the fourth, each short, the last usually the longest and thickest. Honey-tubes wanting. Tarsi with but a single claw, in the species so far described.

Dr. Fitch states that the species are always viviparous and never oviparous, an assertion which cannot be accepted as correct without further proof.

RHIZOBIUS LACTUCÆ. Fitch. Lettuce Earth-louse.

The *young lice* measure 0.02 in length, are very pale yellow, glossy and watery, with the legs and antennæ whitish. They are nearly thrice as long as broad, somewhat flattened, their opposite sides parallel in

some, in others slightly widening backward and rounded at the tip. The transverse sutures are faintly perceptible. The eyes appear as minute black dots, one on each side of the anterior end. The antennæ are thread-like, and only one-fourth the length of the body. When highly magnified, they appear to be four jointed, the joints twice as long as thick, the first joint cylindrical, the two following ones thicker toward their tips, and the last one slightly longer than the others, and thickest toward its base. The feet are but one-jointed, half as long as the shanks, and end in a pair of hooks.

The *mature lice* are 0.08 long, their width less than half their length, some being much broader than others. They are oval, and of a dull white color, with the legs, antennæ and beak dusky, sometimes pale smoky with their bases nearly white, and in other specimens much darker and even blackish their entire length, with the end of the body also slightly. The beak is appressed to the breast appearing like a short dusky mark upon the skin, its tip scarcely reaching the base of the second pair of legs. The antennæ are shorter and more slender than the fore legs, thread-like and five-jointed, the joints cylindrical. The two basal joints are slightly thicker than the following ones, and their length double their thickness. The third joint is variable in its length, in the mature females being almost double the length of the second, and but little shorter than the last joint, whilst in the narrower younger lice it is little, if at all, longer than the second.

The fourth joint is the shortest of all, being but little longer than thick. The last joint is longest, and is bluntly rounded at its end. The sutures of the body are marked by slender impressed transverse lines. The feet show but one distinct joint, which is cylindrical, and four times as long as thick in the hind pair, shorter in the middle and anterior pair, with two hooks at the end.

On the roots of lettuce, often in great numbers; very small oval, white and pale-yellow lice, with dusky legs and antennæ, their bodies dusted over with a white powder.

Rhizobius poæ. n. sp.

This singular species is placed in *Rhizobius*, although in some respects it differs from this genus as understood by Passerini.

Wingless viviparous female.—Size small, the length about .05 inch, width at widest point about two thirds the length; reguarlarly elliptical in outline, very convex, a cross section at any point presenting almost a circle; covered with a blueish white powder, but when this is removed, of a reddish brown, or brownish flesh color. Legs very small and very short, the pairs rather distinct from each other; the tarsi apparently but one jointed when examined carefully under a strong power. Antennæ apparently seven-jointed, very short, and not tapering, the last joint being as thick as the preceding and maintaining this thickness to its tip; first joint very thick, its length about equal to its diameter; second joint about the same length or very slightly longer, diameter not more than half that of the first and not exceeding that of the remaining joints; third joint shortest, not more

than half the length of the second; fourth, fifth and sixth about equal in length, each shorter than the second and longer than the third; seventh longest, equal in length to the fifth and sixth united; whole antennæ very slightly hairy, hairs minute and not more than one or two a joint except the last which has a scattering whorl about the tip, What are here counted as third and fourth joints may in reality form* together the third joint, as the suture is not distinct in any specimen, under a high power.

The body, when the powder is removed, appears to be quite smooth; a large spine-like hair extends back-ward from each side of the tip of the abdomen.

I have been puzzled to make out the beak, which is evidently very small and apparently pressed into a kind of groove or depression on the breast. The eyes have not been distinctly made out, though a slight tubercle has been observed in the place of each.

The head can scarcely be distinguished; the annulations are very distinct and regular.

The antennæ and tarsal characters if allowed to prevail, would appear to place this species in *Trama*, but the third joint of the antennæ is shorter than the others which conflicts with the character of that genus in this respect. The form and habits are like those of *Tychea*. It is also evidently very closely allied to *Rhizobius sonchi* Pass., which is found on the roots of *Sonchus oleracea* and other allied plants and is described by Passerini as follows:

"Powdered with white; elliptical oblong, distinctly annulate. Antennæ very short, pilose, first five articles ovoid subequal, last subclavate and longer than the preceding. Legs very short; tarsi terminated by a single claw."

Found at Cardondale, Illinois, in November, on the roots of grass, apparently *Poa annua*.

Genus TYCHEA. Koch.

The general form is broadly oval and quite convex; the segments distinctly marked, those of the throax similar in appearance to the others. Beak rather long, and thick. Antennæ very short five-jointed according to Passerini and six-jointed according to Koch, but it is probable that the former author omits the little spur at the tip of the fifth joint which is usually present, while the latter counts it; the third joint longest usually equal to the fourth and fifth. Honey-tubes wanting.

The species so far as known are wingless and reside on the roots of plants.

TYCHEA ERIGERONENSIS. n. sp.

A short time ago I received from Prof. T. J. Burrill of the Industrial University a very neat drawing accompanied by notes, and some specimens of a wingless plant-louse found on the roots of Endive and *Erigeron canadense*, which as will be seen by his notes, copied below, he susposed would fall in the genus *Trama*.

I am in considerable doubt as to the proper position of the species, but for reasons given below I am inclined for the present to place it in *Tychea* of Koch, as it is excluded from *Trama*, as limited by Passerini, by the tarsal character.

Wingless specimens (the only kind observed).—Antennæ apparently only five jointed unless the little spur at the end be considered a sixth joint; third joint slightly the longest and about equal in length to the first and second; fourth about three-fourths the length of the third; fifth slightly longer than the fourth, and appears to have a spur or rudiment of a sixth joint at the tip. Eyes not apparent, but the position occupied by a small, white, granulated protuberance. Beak long and stout, reaching slightly beyond the base of the posterior legs; the penultimate joint about two-thirds the length of the last joint, and broad. Body very regularly ovate, and very convex; smooth, without hairs, bristles or down of any kind, except a brush of short hairs at the tip of the tail. Apparently furnished with a short distinct, broad tail, but this may not be a true tail. The stomata are very distinct and brownish. No honey-tubes or signs of any, visible. The abdominal segments are very indistinctly marked, the ventral segments more distinct. The prothorax is rather narrow in front, and forms a very distinct offset with the mesothorax.

The general color is transparent white, varying to a pale cream color; antennæ dusky, and in some cases, even dark, almost black at the tips. Legs very short, femora and tibiæ pale, dirty white; tarsi fuscous. Size small.

Prof. Burrill, who is an excellent microscopist and close observing naturalist, furnishes the folowing memorandum in reference to them:

"CHAMPAIGN, ILLS., Oct. 25, 1878.

"Louse on the roots of Endive and *Erigeron canadense*, in the garden. They were noticed last year upon the former, and occasionally throughout the last summer, on both. Numerous, usually in clusters of many individuals of various sizes, No winged forms observed. All white, the apical joint of the beak, a little darkened; the feet and antennæ somewhat bluish or brownish; eyes dark and very small. Feet with two joints, the last very short and terminated with a pair of claws. Antennæ five-jointed, the third longest. Nine abdominal segments, each furnished with a (very small) tubercle on each side, and four dorsal ones, making four lines down the back, the inner ones of the first, second and third segments run together; two rows on the head and thorax. The lice are attended by a medium sized yellow ant, which seems to be very solicitous for their safety, taking them in their mouths and carrying them away when disturbed, and dying when separated from them. This louse is no doubt *Trama radicis*, mentioned by Harris. The body is plump and rounded when

full, but after a short time, when not supplied with food, becomes shrunken, and a distinct lateral ridge is found."

The specimens sent me, taken from the two plants mentioned, were mixed before the Professor's letter was received, supposing them to be the same, which appears to be his opinion; but a full and careful examination has satisfied me that there are either two varieties or two species embraced. The one described is quite smooth, without hairs or bristles, except the brush of hair at the end of the broad tail; what Prof. Burrill supposed to be tubercles, were not seen by me in the specimens received, but little bubbles, regularly spaced along the side and which apparently proceeded from the stomata, were seen in one specimen; none were observed along the back. Another specimen was noticed, which had the antennæ distinctly hairy, the tips of the outer joints having almost complete whirls of scattering hairs at the tips; this specimen also presented some other characters slightly differing from those described; and hence I have been led to the opinion the latter belong to different species.

But the most important question connected with the history of these insects, at least most important to our agriculturalists, is this; are these wingless, root inhabiting insects, the ultimate and permanent form of the species? There are some reasons which induce me to believe that they are dimorphic, and that this subterranean character is but one of the forms they assume, and is probably a means provided by nature of passing through the winter or other portion of the year, during which the particular plants they inhabit furnish them no means of subsistence.

One is, that very few of these subterranean species have been carefully studied; but where this has been undertaken and carried out a large per cent. of these few have been traced to the winged form. Another evidently is that all these specimens have a larval appearance; the antennæ are not fully developed; several of them showing beyond a doubt that the spur at the end of the fifth joint was growing into another joint of the form found only in those species with seven jointed antennæ; and in these cases the third showed a constriction indicating a division into two joints, which is a very common method of development in this family. I am satisfied therefore that this species should be included under a genus with six or seven-jointed antennæ. And although placed with those considered as permanently wingless, as indicated by the characters yet for reasons more fully set forth in the introductory part of this report, I am pretty well satisfied that it will ultimately be found that these are dimorphic forms of winged species.

Tychea panicl.* Thos.

(See figure 31, at end of report).

Antennæ very short, in the specimens examined, which appear to be scarcely full grown; not reaching beyond the prothorax, apparently five-jointed; joints nearly equal to each other, sub-moniliform. Body

ovate, very convex. Apparently without eyes, at least I failed to find them with a pretty high power, yet Mr. Pergande appears to have found specimens in which they were minutely represented, as shown in the figure drawn by him. Beak very short, reaching but little beyond the first coxæ. Legs unusually short, the hind pair being scarcely longer than the others. Without honey-tubes or anything representing them Divisions between the segments not well marked. Uniform orange red or reddish-yellow; beak tipped with fuscous. Length not more than about 04 of an inch.

Found during October, by Mr. T. H Pergande, at St. Louis Mo., on the roots of *Panicum glabrum.*

This is probably a species of *Tychea*, which has, according to Koch, six-jointed antennæ, but according to Passerini, only five.

SPECIES OF UNCERTAIN POSITION.

The following species described by Dr. Fitch have been placed in *Callipterus*, but as he asserts that the wings lie flat in repose they cannot belong to that genus. As I am unacquainted with them I have not attempted to assign them to their proper position.

Aphis caryella Fitch.
Callipterus caryellus Fitch.

Pale yellow with white antennæ which are alternated with black rings, the wings transparent and without spots, their veins slender and pale yellow, the legs yellowish white to their ends. Length 0.12 to the tips of the wings. The abdomen is depressed, egg-shaped, its apex slightly narrowed and elongated. The antennæ are longer than the body, tapering, seven jointed; two basal joints as broad as long, twice the diameter of the following joints, third joint longest, slightly thicker towards its base; fourth and fifth joints rather shorter than the third, cylindric, two last joints together about equaling the fifth in length, the sixth swelled at its tip into a long oval knob, the seventh more slender but not capillary, shorter than the sixth; a broad black band at the apex of the third and each of the three following joints. First vein of the fore wings straight and almost transverse, second vein bent near its base; running first towards the apex and then turning rather abruptly and continuing straight to the inner margin; more than twice as far from the first at tip as at base, third vein arising from the stigma near its anterior end; and not from the rib-vein forward of the stigma, as it does in the aphides generally, except those petaining to this group, its base and its apex about the same distance from the second vein that it is from the first, forking rather forward of its middle; strongly bent at this point; and from hence to its tip parallel with the third vein or but slightly diverging from it; its tip a third nearer that of the third vein than this is to the second; second fork nearer the fourth vein at tip than to the first fork, the triangular cell between it and the first fork with its three sides equal; fourth

vein short and often nearly abortive, shorter than the second fork, equally curved through its whole length, its tip much nearer that of the rib-vein than that of the second fork; rib-vein very slightly diverging from the margin, from the base to the stigma, curved from thence to its tip. Stigma oval, about twice as long as wide, watery, sometimes tinged with yellowish. A variety has the stigma dusky at its tip. Another variety (*costalis*) has the rib-vein coal black interrupted with whitish towards the stigma, which is dusky and black at each end. On the leaves of hickory

Aphis punctatella. Fitch.
Callipterus punctatellus. Fitch.

This is much like the preceding in the color of its body, antennæ and wings, but has black feet and a black dot on the base and another on the apex of each of the veins of the fore wings; the stigma is salt white with a brown streak at each end; the second vein is wavy and at its tip is curved towards the tip of the first vein; the third vein arises from the basal extremity of the stigma and forward of its furcation curves perceptibly towards the apex of the wing; the fourth vein is longer than the second fork.

Aphis maculella. Fitch.
Callipterus maculellus. Fitch.

Differs from the *caryella* in having only a slender black ring at each articulation of the antennæ, the feet and a band near the tips of the hind thighs blackish, the stigma salt white, its base black, its apex dusky; fourth vein with a black dot on its base and a dusky one on its apex; the first vein, apical third of the second vein, and the first and second forks broadly margined with smoky brown; second vein wavy and parallel with the third vein till near its tip where it curves towards the first vein, its base a third nearer the third than it is to the first vein; third vein arising from the anterior extremity of the stigma, with a dusky spot on its apex.

Aphis fumipennella. Fitch.
Callipterus fumipennellus. Fitch.

This is of a dull yellow color with blackish feet and the wings smoky with robust brown veins, the rib-vein much more distant from the margin the first half of its length than in the other species, and from its middle to the stegma approaching the margin, the fourth vein, equaling the stigma in length.

Aphis marginella. Fitch.
Callipterus marginellus. Fitch.

Pale yellow, antennæ white, their bases and the four bands black; a coal black band in front between the eyes and continued along each side of the thorax to its base; elitra pellucid, stigma, outer margin and rib-vein coal black, first vein with a black dot on its base; fourth vein slender, black, the other veins colorless; outer margin of hind wings black.

CALLIPTERUS MUCIDUS. Fitch. The Mouldy Aphis.

A solitary plant louse, walking on the leaves or hovering on the wing in their shade, having its body, legs and antennæ coated over more or less, with pruinose matter resembling fine bluish-white mould. Pale green whitish anteriorly, legs and antennæ black, their bases pale; wings clear and glassey with a small dusky or black cloud on the tips of the veins; the rib-vein whitish to the stigma, and from thence thicker and coal black. Length 0.075.

INSECT ENEMIES AND PARASITES.

There is parhaps no other group of insects in the entire class that has as many natural and inveterate foes, as that which includes the true Plant-lice. These species appear to be designed by nature to extract the sap of plants and fit it for the nourishment of other insects. Living entirely upon the sap of the leaf, twig or stem on which they are deposited, and having little occasion for exercise or movements, and led by instinct to avoid as for as possible the direct rays of the sun, their external envelope or dermal covering, in fact all parts of the body, remain soft and tender, and their rapid imbibation not only constantly keeps them filled with fluids, but is so great in proportion to their capacity that nature has provided them with nectaries or honey-tubes as escape valves for the overplus. They are therefore most dainty food for the rapacious insect appetite, and their enemies are numbered by scores; in fact nature seems to have prepared entire families of insects as a special means of keeping them in check, and without which vegetation would soon, in a great measure, succumb beneath their attacks.

These enemies are found in the Orders *Coleoptera* (beetles), *Neuroptera* (lace-wing flies, etc.), *Hymenoptera* (bees, wasps and wasp-like insects), and *Diptera* (flies and gnats).

Their beetle foes (*Coleoptera*) are confined chiefly to the *Coccinellidæ*, or lady-bird family. These beautiful little beetles, so well known to everyone by their hemispherical shape, and bright red or yellow color with black dots, or black color, with red or yellow dots, are most inveterate Aphis eaters, both in their larval and perfect states. Their, eggs, which are smooth, oval and usually a bright yellow color, may frequently be met with on the under surface of leaves, in clusters of from two to three dozen, placed close together, and gummed by one end to the leaf.

These hatch in a few days, producing usually small blackish larvæ, which are somewhat elongate in form, and narrowed posteriorly, and possess six legs situated on the three anterior segments. As they grow they gradually assume the colors indicative of their specific differences and they also develop on the sides, and in some species over the back, rows of tubercles or spines. (See fig. 32, a., 34 and 39). When they have completed their growth, they shorten their length, the back becoming more convex; and fixing themselves by the tail to the bark, twig or leaf, enter the pupa or chrysalis state, from which in a short time the lady-bird is developed. These larvæ, from the time they issue from the egg until they have completed their growth, feed upon plant-lice or other tender insects, the former being their favorite and usual food. Some species prey chiefly upon the bark-lice. Nor do their carniverous propensities cease with the close of their larva state, but continue in the perfect state also. Half a dozen of these will clean a currant or rose-bush of lice in three or four days. I have seen a large rosebush badly infested with lice, cleared of them in two days by four spotted lady-birds (*Hippodamia maculata*) which the owner placed on it at my suggestion.

Fig. 32,

Lady-bird larva

The following species of this family may be mentioned as those most common in Illinois.

HIPPODAMIA (MEGILLA) MACULATA. De G. The Spotted Lady-bird.

Fig 33

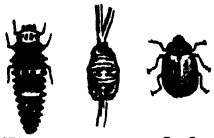
The spotted Lady-bird

Is oval in form, of a brick red color, with two black spots on the thorax, and ten on the wing covers. The latter are arranged four on each side and two on the center or middle line where the two wing-cases meet.

Is a general feeder, destroying eggs of various insects, and eating plant-lice, chinch bugs, etc. Very common throughout the State.

HIPPODAMIA CONVERGENS, Guer. The Convergent Lady-bird.

Fig 34



The convergent Lady-bird, larva and pupa

A little smaller than the preceding, and broadly oval in shape; orange or orange-red; thorax black, with two oblique white dashes; five black dots on each wing case, placed 2, 2 and 1, the anterior two the smallest, all less in size than those of *H. maculata.*

HIPPODAMIA 13-PUNCTATA, Herbst. The 13-Spotted Lady-bird.

Fig 35

Rather smaller than *H. convergens*, but similar in form; of a brick-red color, with six black spots on each wing-case, and one on the suture near the front.

HIPPODAMIA GLACIALIS, Fabr. Ice Lady-bird.

Similar in form and size to *H. maculata*; of a bright orange-red color; thorax black, with two oblique yellow dashes; each wing-case marked with a double black spot just behind the middle, and a single black spot near the tip. A northern species.

COCCINELLA 9-NOTATA, Herbst. The 9-spotted Lady-bird.

Fig 36.

9-spotted Lady-bird

About the same length as *H. maculata*, but hemispherical in form, varying in color from orange to a brick-red; with for black spots on each wing-case and one on the suture near the front.

COCCINELLA MUNDA, Say. The Trim Lady-bird.

Fig 37

Trim Lady-bird

Is somewhat smaller than the preceding species; hemispherical; of a clay-yellow or dull orange color, without spots or marks of any kind on the wing-cases.

CHILOCHORUS BIVULNERUS, Muls. Twice-stabbed Lady-bird.

Fig 38 Fig 39

Twice-stabbed Lady-bird and larva.

Orbicular; black, with a red spot on each wing-cover.

ANATIS 15-PUNCTATA, Oliv. The 15-spotted Lady-bird.

This is our largest species, being half an inch long; hemispherical in shape; the thorax is cream-colored, with a large black spot in the middle and usually a black dot each side; the wing cases chocolate color, with seven black dots on each and one on the sutures near the front; but it varies considerably, and some of the dot are sometimes wanting.

Among the Hymenopterous insects which assist in destroying plant-lice, none perhaps are more affective than certain very minute *Ichneumon* flies, which have received the name *Aphidides* from the fact that they are parasitic upon the *Aphides* or plant-lice.

These little insects, which seldom reach one-tenth part of an inch in length, are wasp-like in shape, furnished with four tiny wings with three cubital cells in the anterior ones; mostly black bodies, variously adorned with bright yellow bands and other marks; the second and third segments of the abdomen move freely upon each other. When one is about to deposit her eggs she approaches and touches a plant-louse with her long slender antennæ, and is enabled thereby to determine with certainty whether it has received an egg; if not, she at once punctures the body with her slender ovipositor and deposits an egg therein, and passes on to another to repeat the operation. This egg produces a minute grub or larva, which ultimately destroys the life of its victim, and comes forth a fly, similar to its parents.

The description of a few species will be sufficient to convey to the reader an idea of these useful insects, which is all that is necessary for present purpose.

APHIDIUS LACTUCAPHIS, Fitch. Lettuce-louse Aphidius.

Deep black, legs trimmed with brownish; antennæ 19-jointed, second joint smallest, globular, third joint longest, with a slight constriction in the middle; wings slightly smoky, outer marginal vein and vein bordering the cell beyond the stigma, black, outer veins brown, stigma white; abdomen long obovate, flattened, rather narrower than the thorax, tip rounded. Length, 0.06. inch.

The names given indicate the species of Aphis upon which these insects are known to be parasitic. But it is not probable they are confined to a particular species.

APHIDIUS (PRAON) POLYGONAPHIS, Fitch. The Knot-weed-louse Aphidius.

Black and shining; abdomen slender elliptical, of a bright sulphur yellow color; tinged with dusky above and beneath the tip, with broad yellowish bands at the anterior sutures, base narrowed to a short pedicel, which, with the legs and base of the antennæ, are reddish-yellow; antennæ 17-jointed. Length 0.08 inch.

APHIDIUS (PRAON) VIBURNAPHIS. Fitch. Cranberry-louse. Aphidius.

Black and shining; similar to the preceding, but the abdominal pedicel and the legs only yellowish; antennæ 15-jointed.

APHIDIUS (PROAN) AVENAPHIS. Fitch. Grain-louse Aphidius.

Black; legs base of the abdomen and also a sub-basal band, yellow; abdomen as long as the thorax, but narrower, oval, first segment forming a pedicel; antennæ as long as the body, slender, 20-jointed, black, thorax egg-skaped, black and shining. Length, 0.10 inch. Parasitic on the oat or grain Aphis (*Aphis avenæ*).

TOXARES TRITICAPHIS. Fitch. Wheat-louse Aphidius.

Black, shining; antennæ, thread-like, longer than the body, and 25-jointed; thorax egg-shaped and rather broader than the head; abdomen flattened, long oval, a little longer than the thorax, but scarcely as broad. Wings transparent,slightly smoky, strongly iridescent; stigma pale brown; veins brownish black. Length 0.08 inch.
Parasitic on *Aphis avenæ*.

TRIOXYS SALICAPHIS. Fitch. Willow-louse Aphidius.

Black and shining, with a long elliptical abdomen of honey-yellow color at the base, but gradually passing to black posteriorly; legs, yellow; feet, dusky; antennæ two-thirds as long as the body, 13-jointed. Length, 0.06 to 0.07 inch.

TRIOXYS POPULAPHIS. Fitch. Poplar-louse Aphidius.

Black and shining, the abdomen long, elliptical and much narrower than the thorax, the basal suteres yellow; legs yellow except the posterior thighs, which are black; antennæ nearly as long as the body, 15-jointed; outer margin of the fore wings, blackish; stigma dusky. Length, 0.07 inch. Parasitic on an Aphis found on the leaves of the Balm of Gilead.

TRIOXYS CERASAPHIS. Fitch. The Cherry-louse Aphidius.

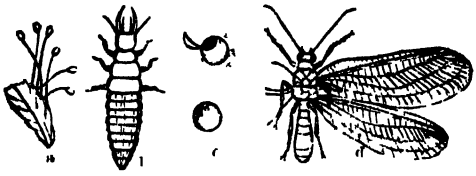
Black with the palpi and legs pale yellowish brown, antennæ almost as long as the body, 18-jointed; abdomen elliptical, rather narrower and shorter than the thorax, with scarcely any pedicel at its base,

shining and tinged with brownish; wings pellucid; stigma, cloudy white. Length, 0.07 inch.

These as a matter of course, form but a small portion of the large number of species of this group of parasitic insects. Whether any species are limited in their operations to a particular aphis has not been yet satisfactorily ascertained; that some are parasitic on more than one species of aphis is true, but at the same time it may be true that certain plant lice may have their special parasites.

Another group of plant-lice destroyers is found in the order *Neuroptera*, which consists of the Dragon-flies, Ant-lions, Lacewinged-flies, etc., Those are the lace-winged flies which have rather long, slender bodies, and four broad, spreading, thin membranous wings with numerous transverse veinlets. They are usually pale green, and when handled leave on the hands an unpleasant odor. The female suspends her little eggs on delicate threads, in clusters, on the under side of the leaves where the plant-lice abound.

Fig 40



Chrysopa—Eggs, Larva, Coocoon and Perfect insect

a. The eggs mounted on their slender thread like stems *b* The larva with its long sharp, sword-like jaws *c.* The singular small coocoons in which the pupa resides; one showing the opening and lid through which the insect has escaped. *d* The perfect insect, showing the wings on the right side only.

The larvæ which hatch from these are somewhat spindle-shaped, narrowed in front, rounded behind, and broadest rather behind the middle, and furnished with large curved, sharp jaws, with which they seize and devour their helpless victims.

A description of two or three species known to inhabit Illinois, will be sufficient to give the reader an idea of these important aids.

They belong chiefly to the genus *Chrysopa.*

Chrysopa oculata, Say. The Eye-marked Golden-eye.

Greenish-yellow; antennæ yellowish, apex obscure, second joint annulated with black, first joint with a red dorsal spot and ring; head yellow, bases of the antennæ surrounded with black rings, a black point each side behind the eye, and four black points on the occiput; front thorax with three black points each side; wings hyaline, transverse veins of the front pair more or less black. Length to the tip of the wings six to seven-tenths of an inch; wings expanded measure rather more than one inch.

CHRYSOPA ILLEPIDA, Fitch. The Disagreeable Golden-eye.

Similar to and probably a variety of the preceding; has the four black points on the occiput united into two lines, and a part only of the transverse veins of the front wings black.

CHRYSOPA CHLOROPHANA, Fitch. The Yellow-headed Golden-eye.

Similar to the preceding, and probably a variety also of *C. oculata*. Pale yellowish-green, with a light yellow head; the wings more rounded at the apex, with the veinlets mostly green. Expands 1.10 inch.

CHYSOPA PLORIBUNDA, Fitch. The Weeping Golden-eye.

Very pale green, with a paler dorsal stripe along the body; head pale yellowish, with a small black line at the eyes; antennæ whitish, with the apex yellowish; legs greenish white, feet yellow. Sometimes there is a reddish or orange spot each side of the head. Expansion one inch.

Common in Illinois.

CHRYSOPA PSEUDOGRAPHA, Fitch. The Counterfeit Golden-eye.

Much like the last, but of a straw color without any tint of green; head brighter yellow, with a small black line each side of the face; antennæ, feet and veins of the wings, whitish; abdomen with a narrow white dorsal line and an apical yellowish spot on each side of each segment. Expansion one inch.

Fig 41.

Syrphus fly.

Although these and several others are given by Dr. Hagan and Dr. Fitch as distinct species, it is more than probable they are but varieties of one or two species; at least they have similar habits, and hence their distinction is a matter of but little consequence to the horticulturist. They are his friends and so far as possible, should be protected, and whenever he observes the eggs mounted on their little, transparent hairs, he should be careful to leave them uninjured, as the larvæ will soon destroy the plant-lice among which they are placed. Nor do they confine their attacks to Aphides alone, but prey with equal avidity on a host of other injurious insects, even the unsavory chinch-bug is not free from their attacks.

Fig 42.

a, Larva of Syrphus fly. b, Part of a segment highly magnified.

They usually pass the winter in their coocoons, though some appear to live on until spring in the perfect state.

Other inveterate enemies of the plant-lice are certain two-winged flies which belong to the order *Diptera* and family *Syrphidæ*, of which the genus *Syrphus* is the type, or rather contains the typical species. (See figs. 20, 41, 42 and 43).

These somewhat resemble the common house fly in size and shape, but are much handsomer, being usually of a bright yellow color, with bands and spots of black; the abdomen is flattened, and usually marked with bands or partial bands of black. They are known in some sections as "corn flies," as they are often seen in great abundance, about the time the corn is in bloom, hovering around the stalks, poised in the air apparently almost motionless. Sometimes they are called "sweat-flies," from the fact that on hot, sultry days they are most numerous. They drop their eggs one in a place, upon the leaves and twigs which are infested with plant-lice, led by instinct to know that these will form appropriate food for their young, although they as perfect insects, feed on the sweets of flowers and other similar food. The larvæ which hatch from these are maggots without any distinct head, not even possessed of eyes, but compelled to seek their food by blindly exploring the surface of the leaf on which they are placed. They are somewhat of an elongate wedge shape, blunt and broadest behind, and tapering forward to the front. When one is feeding it elongates the front part of its body, and feeling around until it finds an Aphis, fastens upon it by its mouth, raises it in the air, and proceeds to suck the fluids from its body until nothing but the shell remains.

Fig. 43

Syrphus larva feeding on a plant-louse

These worms or maggots, are usually of a transparent greenish color, sometimes more or less clouded or spotted with other colors.

Quite a number of species belonging to this genus are found in Illinois, but as these have not been identified, and I am not at present supplied with specimens I am unable to give discriptions.

Certain minute mites, belonging probably to the genus *Trombidium*, have also been found preying upon plant-lice, and, as I suspect, also upon their eggs. Some birds also assist in diminishing their numbers.

This array of enemies, which might be greatly increased, will show that nature has been careful to provide means for keeping in check these prolific vegetable parasities, without whose aid plants would necessarily soon be destroyed.

ARTIFICIAL MEANS OF DESTRUCTION,

The external envelope of the plant-lice is so delicate, and their hold on life, so far as the individual is concerned, so easily broken, that they are usually quite easily destroyed by the direct application of any acid substance to their bodies. As they live out their entire lives on a very limited portion of the plant they occupy, it follows that they

must be attacked directly, and while on the plants they infest. It is true that there is usually one brood or generation that passes the winter in the egg state; but so far the closest scrutiny has been enabled to follow but few through this period, and the eggs are not only so minute as to render their discovery difficult, but they are more tenacious of life than the adult apterous individuals of the summer broods. It is apparent, therefore, that the most accessible point and vulnerable period of their existence is during the summer, while they are at work upon the plants; and the remedy must be one which will destroy the lice without injuring the life or value of the plant. As they are too minute to be picked off by hand, even from the most valuable plant, if at all numerous; and cling by their inserted beaks too closely to the leaves and bark to be easily dislodged, our remedies are limited almost entirely to direct applications of such character as will kill them without destroying the plant.

In some cases as with the cabbage and some other garden vegetables, some small plants, such as flowering annuals, pot plants etc., which are attacked by species which limit their operations to the leaves, it is possible, by being watchful, to check them by removing, as soon as they appear, the leaf or leaves on which they commence operations. If this is done in time, and any stray winged specimen seen on the plant destroyed, the remedy may be effectual. This is one of the remedies practiced in England for the species which attacks the turnip crops. While it is often well to make use of this remedy, especially in cases of isolated pot and some other plants, the objection to relying wholly upon it even in these cases is, that if but a few stray individuals are overlooked they soon spread their colonies over the foliage, and some more effectual means of destroying them has to be adopted

The following are some of the remedies which have been suggested, each of which may, under certain circumstances, be used with advantage.

One of the most common, and one easy to apply, is drenching the plants infested, with strong or acrid solutions, such as strong soap-suds, weak lye, tobacco water, lime water, soap-suds and tobacco water, mixed, to which sometimes sulphur is added, etc. The application to be made as complete and thorough as possible.

Where the plants cannot be thoroughly drenched, which is usually the case, the solution may be applied with a watering pot or garden syringe, or on the limbs or twigs of trees with a whitewash or other similar brush, or even an old broom. Such application, it must be remembered, only destroys the lice it touches, and if but a few, here and there, are left, their powers of rapid reproduction will enable them soon to establish new colonies, and the work will have to be done over again; hence, wherever the plants can be absolutely drenched, this is the best method. Where the terminal twigs and leaves only of bushes and low trees are affected, these may be bent down and dipped in a basin holding the solution. A solution of strong carbonate of ammonia—half an ounce to one quart of water—is recommended, especially where the lice are on fruits or leaves which are to be eaten, as it is both clean and effectual. Another remedy, where the application is on an extensive scale, is dusting the plants with lime; this is recommended by Dr. Harris for infested potato fields; I would

also suggest it for the Grain Plant-louse *Aphis granaria*, where found on winter wheat in the spring before gathering about the heads. For the latter species Dr. Fitch recommends dusting the grain with dry power of chloride of lime.

For the Carrot Plant-louse (*Aphis dauci*) Curtis recommends dusting powdered tobacco over the crowns early in the morning while the due is upon them, or watering them with a decoction of tobacco

The most effective remedy where it can be applied, is tobacco smoke or the fumes of burning tobacco, sulphur, etc. But to render these successful the plant must be covered in some way, so as to confine the smoke or fumes and cause them to penetrate to all parts A frame in the shape of a box or bell, covered with cheap cloth of any kind, will answer very well for the flower or vegetable garden, and might be used also for small bushes.

Various means of using this remedy will suggest themselves in connection with the means at hand and the plants to which it is to be applied; the object to be attained being, to confine the smoke of the fumes immediately around the lice long enough to suffocate them. Sometimes a minute or two will suffice, where the application is strong and direct; but usually ten or fifteen minutes, or even longer will be necessary, where the lice are numerons and in compact colonies.

It is possible that an apparatus may be invented for the direct application of tobacco smoke or sulphur fumes, something on the plan of sand bellows, with which painters dust sand over woodwork, or similar to the Babcock extinguisher.

If it possible to bring into use, at a reasonable expense, something of this kind sufficiently large to reach, through hose or pipes, the limbs of trees, it would be exceedingly useful not only against aphides but numerous other insects.

REMARKS.

Although, as heretofore stated, most cultivated as well as uncultivated plants are more or less subject to the attacks of one or more species of plant-lice, yet in England, and I believe so far as observed in this country, clover appears to be singularly exempt.

The potato, which is subject to the attacks of so many other insects appears to have no plant-louse peculiar to it or that can properly be called a potato plant-louse. It is occasionally attacked by the *Bean Aphis*, and some other species, but it is very rarely the case, that it is injured by these insects. Curtis states, that in 1847, when the Aphides were abundant in certain parts of England, destroying the bean crop, potatoes in the same garden were not injured. Harris speaks of plant-lice sometimes infesting potato fields, but I presume he alludes to the occasional visitations, such as I have mentioned.

In this country the apple, plum, cherry, currant, willow, grape, cabbage and a few other vegetables appear to suffer most from the attacks of these insects; occasionally wheat and corn are injured somewhat

seriously in limited localities. Green-house and other in-door plants, if not carefully watched, are likely to be seriously injured by them, but a little precaution with a knowledge of the proper remedies and preventive measures, such as those recommended, will generally suffice to eradicate them.

If the latter part of the winter is open, and the spring warm, bringing them out in advance of their enemies, they are then more apt to be abundant and injurious than ordinarily, as they are thus enabled to get the start of the latter, and the ascendency thus obtained, is not easily overcome.

The true Aphides are generally quite sensible to cold, being largely destroyed by heavy frosts. and severe cold spells; but, as already shown there are exceptions to this rule; and it is more than likely, that this depends to a great degree upon the effect the cold has upon the plants on which they reside. Some, and possibly most, of the woolly species appear to be less injured by the cold, than the various species of *Aphidinæ*; but it is quite natural that this should be so as the latter reside chiefly on the foliage of plants, while the wooly species are found chiefly on the stems, branches, trunks and roots.

It is supposed by many that the insects of this family are easily affected by water, but Cartis states that he "has been surprised to see how slightly they are affected by wet," that "some *Aphides* attached to a willow twig were immersed in water for sixteen hours which did not appear to incommode them in the least, for, on being taken out and placed in the sun they increased and multiplied shortly afterwards." Root-lice during winter and the wet weather of spring are often subjected for a long time to moisture which does not appear to destroy them. Yet other species immersed but for twelve hours have been thereby destroyed showing a wide difference in species in this respect. The experiments tried in France upon the root form of the Grape Phylloxera indicate the inefficiency of this agency in destroying this species, as shown by the extract from the report of the commission appointed to investigate this species, given above.

The author quoted above also further remarks that "their capability of resisting some gasses or effluvia is very astonishing, for instance, I have corked some up in a quill containing a piece of camphor, which produced an atmosphere that killed most insects in a hour, but the Aphides were walking about unaffected after being confined there for twenty-four hours." The fumes of tobacco and sulphur, are perhaps the most potent gasseous agencies in destroying them which are susceptible of general practical application, and should therefore be resorted to wherever it is practicable to use them. Alkaline substances in powder or solution, acrid solutions, kerosene and oils, are generally fatal to them where they can be applied directly; but in order to be effectual these should be applied with a brush, as if but a few are left they soon replemish the colonies. I have noticed that when sprinkled with dry dust they cease to multiply and die. The amount of moisture which escapes from them while they are actively feeding is very large as may be seen by placing a leaf or twig covered with them in a bottle; in a short time the sides of the bottle will be covered with moisture to such an extent as to run down in drops. Dry dust or powder absorbs this moisture, and hardens the outer skin which is fatal to their existence.

Dr. Harris states that "lice multiply much faster, and are more injurious to plants in a dry than in a wet atmosphere." That as a very general and almost universal rule, plants are more easily injured in dry weather than in moist, is undoubtedly true; but as to the other part of the statement, I think he is mistaken as a rule, for there is scarcely an individual, who has paid any attention to this matter, who is not aware that a warm, humid atmosphere is favorable to their increase. Yet it must be admitted that there are some species, especially those that infest trees, which appear to be more abundant in dry than in wet seasons. Curtis remarks that "their increase in damp sultry weather is equally surprising; and the universal diffusion of such myriads after a thunder storm, has led, as with the black caterpillers, to the vulgar error of their falling from the clouds." He thinks it probable that electricity also assists in their rapid and sudden development sometimes observed. On the other hand, Dickson in his *Practical Agriculture*, remarks that "In such summers as are dry, beans are liable to be much injured by the attacks of the *Black Fly*, or what is often termed the *Dolphin*, the whole field, in particular cases being in danger of being destroyed in the course of a few days." Black-fly, Dolphin and Collier, are terms applied in England to a variety of the Bean Aphis. It is not stated here that it is the rapid increase of these insects in such weather that renders the beans more liable to destruction in dry than wet seasons; it is therefore more probable that the weakened vitality caused by the want of moisture, has much to do with it.

As a rule, the remedies applicable to one species, are equally applicable to another of similar habits, where the one is as easy of access as the other. But the measures so far suggested, apply almost exclusively to species that operate on the surface, and not to those which enclose themselves in galls. For such species it is evident that topical applications will be of no effect, and the same thing is true of fumigations. The surest, and in fact, the only remedy which so far, has been suggested, is to pluck the leaves and twigs containing them, and consigning them to the flames.

If it should hereafter be ascertained that it is a habit of many of the foliage species to deposit eggs on trunks of trees in the crevices of the bark, as is suggested by some entomologists, and thus pass the winter, rubbing the bark, in the spring, with soft soap, will doubtless aid in their destruction. As this practice is beneficial in other respects, I think it would be well at any rate, to practice it to a greater extent than is now customary. It will be beneficial, at least, in destroying the species that reside on the trunks, and the rains will carry it down to roots, and assist to some extent, in disturbing those that work around the base and on the roots.

According to Boisduval (*Entomologie Horticola*), M. Gehin, in an article on injurious insects, (*Bull. Soc. Hist. Nat. Moselle*, 1862), expresses the opinion that the injury occasioned to the peach, supposed to be by the plant-louse that attacks the leaves, is not due solely to these insects, but in consequence of some sudden atmospheric change, which effects the leaves and renders them more suitable for the sustenance of the lice, and thus causes their more rapid development, which augments the injury. He states that where the trees are perfect and vigorous, they are seldom attacked by these insects.

This, I think, is beyond doubt, true, not only with reference to this species, but also to many others.

The wooly aphis of the apple tree, as I have repeatedly noticed, appears to attack defective, injured or unhealthy trees in preference to those which are sound and vigorous. Where these insects attack vigorous and healthy plants, they prefer those in close, confined situation, than those amply supplied with sun and air. This fact therefore suggests as a remedy proper pruning in the case of trees and proper exposure to sun and air of the smaller plants.

Some years ago a machine was invented in Paris for the purpose of forcing through a tube by means of a kind of pump, the fumes of tobacco, sulphur, etc., upon the infested portions of plants. I suggested the use of an apparatus of this kind in an article to the Prairie Farmer without then being aware that it had ever been tried. What success has attended the use of this apparatus I am unable to state, but it certainly is worthy of a fair trial. Some tender plants as a matter of course, will not bear such treatment, but the larger number will; and as it is not necessary to limit the application to tobacco or sulphur, various other materials might be tried.

SUPPLEMENT.

SUPPLEMENT.

I regret that the valuable papers on the Aphides of the United States, by Prof. C. V. Riley and Mr. J. Monell, published in Bulletin No. 1, Vol. V. of the U. S. Geol. and Geog. Surv. Terr. 1879, did not reach me in time to incorporate the additions in my report in their proper connection.

Although not yet printed the Mss. is required to be ready for publication by January 1, of each year, and submitted, yet it usually happens that it is not printed for some months after it is submitted.

Thanking the authors for an early copy, I will add in this supplement the descriptions of the new species, and such observations and criticisms, on their notes as I think are required.

SIPHONOPHORA ACHYRANTES. Monell.

"*Apterous females.* Pale green, with a dark, irregular stripe on each side of the abdomen, in fully developed specimens occasionally with an additional short stripe near the basal part of the abdomen, extending over several segments.

Winged females; head, prothorax, and sometimes the upper segments of the abdomen, brownish black; the upper part of the thorax with a narrow but conspicious, transverse yellow band; general color of the abdomen pale green, with irregular, broken, transverse, dark brown lines, three of these often becoming confluent, and producing a dark patch in the center of the abdomen, just above the honey-tubes. Honey-tubes long, cylindrical, slightly dusky at their apices. Style long, slender, slightly curved upwards, more or less dusky. Length of the antennæ a little variable, as long as the body or slightly longer. Frontal tubercles approximate at base, and somewhat porrect. Wings hyaline; stigma rather narrow and linear; stigmal vein very short, and curved much as in the genus *Callipterus*. The forks of the third discoidal vein are especially variable, their length being in one case four times and in another one-half that portion of the third vein between the base of the lower branch and the base of the forks. In the normal specimens these distances are sub-equal. Length 2.28 mm; to tip of wings 3.81 mm.

On the under side of leaves of *Achyrantes* (Amarantaceæ)."

SIPHONOPHORA (?) CALENDULELLA. Monell.

I have some doubt as to the generic position assigned this species, but it is impossible from Mr. Monell's short and imperfect description to form a decided opinion on this point.

"*Viviparous apterous females:* General color very pale whitish-green, varying to yellowish. Antennæ whitish, as long as the body, mounted on porrect tubercles. Legs yellowish, except the tarsi. The honey-tubes and short style concolorous. Length 1.27-1.77 mm.

On the under side of leaves of *Calendula micrantha*. July, St. Louis, Mo."

SIPHONOPHORA TULIPÆ. Monell.

This appears to be a different species from that I have described under the name *Rhopalosiphum tulipæ*. One or the other of these species is probably identical with *Aphis tulipæ* Fonscol, which Mr. Monell appears to have overlooked.

"*Apterous females*: Pale green, with a dusky green stripe down the middle and darker green on the margin of the abdomen. Winged individuals with the antennæ as long as, or a very little longer than the body, mounted on conspicuous tubercles which are not porrect; apical joint long and threadlike, longer than the fifth, and about five times as long as the sixth. Honey-tubes very long, dusky at apex. Tail when extended, about twice the length of the tarsi, pale green Length 3.04 mm; to tip of wings 4.82 mm.

On petals and stigma of Tulips, April; St. Louis, Mo."

DREPANOSIPHUM TILIAE? Koch.

Siphonophora tiliae, Monell.

Mr. Monell describes his species as follows:

"*Apterous individuals*: Head and thorax yellowish or yellowish-green; abdomen green, honey tubes with the basal one third green, apical portion black.

Winged individuals: Head and thorax reddish-yellow; abdomen and style green antennæ about twice as long as the body, mounted on conspicuous tubercles. Wings hyaline. Stigma yellowish. Honey-tubes sub-cylindric, four or five times as long as the tarsi. Length 2.54—3.04 mm; to tip of wings 5.08 mm.

On the under side of linden leaves causing them to curl."

I think it quite certain that this is indentical with or but a variety of Koch's species. The number of the figure as given by Koch in his text is wrong, it should be 277 instead of 276.

Siphonophora liriodendri. Monell.

"*Winged female:* Head, thorax and two basal joints of the antennæ red. Abdomen green, Honey-tubes, and apical portion of the antennæ black. Antennæ much longer than the body; the tubercle near the apex of the fifth joint very distinct. Honey-tubes usually slightly incrassated at the base, about four times as long as the tarsi. Style slender, when fully extended one-third as long as the honey-tubes, more or less greenish. Wings hyaline. Stigma long, much tapered at base and apex; apex acute, nearly opposite the middle of the stigmal vein. Distance between the apex of the stigmal vein and the apex of the upper forklet equal to half that between the forklets. Length 2.54 mm, to tip of wings 4.57 mm.

On *Liriodendron tulipifera*, June, July; St. Louis, Mo.

The leaves on which this species lives do not curl up as in *S. tiliæ*, but soon turn brown and drop off."

Siphonophora cratægi. Monell.

"*Apterious individuals:* General color pale yellowish-green, with a darker green mark on each side of the base of the abdomen and scarcely preceptible, darker green irregular marks near the base of the honey-tubes. Antennæ about three times as long as the body, black, with the basal third pale greenish; frontal tubercles fully as long as the second antennal joint; seventh joint tapering to an exceedingly slender point in the adult apeterious individuals, as long as the fourth, fifth and sixth joints taken together. Honey-tubes long and subcylindric, extending beyond the tip of the abdomen, pale, almost translucent. Style half as long as the honey-tubes, pale yellowish. Legs entirely greenish. Length 2.28 mm.

"On the under surface of leaves of *Cratægus coccinea*. July, St. Louis, Mo."

I think it quite probable, that when the winged individuals of this species are procured, it will be found that it is not a *Siphonophora*.

Siphonophora sonchi. Linn.

S. sonchella Monell.

Mr. Monell's species is described as follows:

"General color very dark, dull, greenish-brown. Head and thorax inclined to fuscous. General color of legs green; apical half of femora black; tibiæ dusky at base and apex; tarsi black. Tail yellowish-green, very long. Honey tubes entirely black, reaching to the tip, cylindric."

"Dorsum smooth. Antennæ much longer than the body, black; third joint very tubercular; fourth joint distinctly tubercular; remaining joints not so; third joint about as long as the fifth, sixth and seventh

joints taken together; seventh joint as long as the fourth and fifth taken together. Length 2.28—2.78 mm.; to tip of wings 3.81 mm.

"On *Sonchus oleracea.* July, St. Louis, Mo."

I think there is no doubt, but that this is a variety of that exceedingly variable species, *S. sonchi* Linn. If Buckton is correct in the synonyms he gives, there is scarcely a constant specific character; even the smooth dorsum and yellowish tail are found in some varieties, although Buckton relies on the opposite conditions as characteristics; also every shade of color from green to brown, and from brown to red; some are marked with rows of tubercles and some are smooth. The tubercles on the antennæ, do not distinguish Mr. Monell's species from the former. *S. jaccæ*, Linn, is in all probability, a variety of this variable species.

Siphonophora calendulæ. Monell.

"*Apterous individuals*—General color, brownish black; dorsum smooth and shining, a little reddish towards the honey-tubes. Legs yellow, except the knees, tarsi, and apex of the tibiæ, which are jet black. Honey-tubes black subcylindric, very long. Style yellow, slender acute, two-thirds as long as the honey-tubes, or a little less.

Winged individuals: General color black; head and thorax slightly fuscous. Antennæ black, half as long again as the body; third joint as long as the sixth and fifth taken together, very slightly tubercular: the following joints not so. Honey-tubes slightly fuscous toward the apex. Wings hyaline. Length 2.28–3.04 mm.; to tip of wings 3.81–4.56 mm.

"On stems of *Calendula micrantha;* June and July, St. Louis, Mo."

Siphonophora rudbecklæ. Fitch.

Mr. Monell adds the following lists of plants on which this species has been taken, *Vernonia novaeboracensis V. Lindheimeriana, Solidago rigida, S. serotina, Bidens chrysanthemoides, Ambrosia trifida, Cirsium arvense, Silphium perfoliatum, S. integrifolia, Cacalia suaveolens,*

When large numbers of this species make their appearance in a locality, as is sometimes the case, they may be found on almost every plant in the vicinity, apterous. as well as the winged, and very often with their beaks employed in pumping up the sap. I observed them in excessive numbers at Sioux City Iowa, in 1877 on the flats west of the city, near the banks of the little stream which here enters the Missouri. The numbers were so excessive, that many large plants were entirely covered, leaves and stems; I found them even on the *Carices* in the vicinity, and other plants they are not in the habit of infesting, but as a matter of course few in number, and although often, as stated, pumping the sap, but evidently dissatisfied with their food and location as shown by their movements.

SIPHONOPHORA FRAGARIÆ. Koch var *immaculata*. Riley.

At this point Mr. Monell takes occasion to criticise my "*List of Aphidini*" as being incomplete in omitting this and some other species especially those of Haldeman and Rafinisque. This species is given in the list. The variety it is true is not mentioned, nor are the varieties of other species mentioned in that brief paper. Neither Haldeman's nor Rafinesque's descriptions were accessible to me at that time, and for the same reason I will have to omit them from this report, but thanks to his criticism, I can insert the list as he has given it.

The want of books is sadly felt by entomologists of the west, who like myself, do not have access to large libraries. Besides those mentioned, there are two or three other European works devoted entirely or in part to Aphides which after repeated trials I am unable to procure.

APHIS LUTESCENS. Monell.

"*Winged individuals:* General color bright lemon-yellow. Antennæ somewhat pilose, a little shorter than the body. The length of the joints is quite variable; in some specimens the third joint is subequal to the preceding, while in others it is one-third longer. Seventh joint filiform, very much longer than the third. Honey-tubes somewhat dusky, gently tapering from base to apex, the apical diameter being about two-thirds that of the base; about three times as long as the tarsi. Style dusky yellow, blunt at apex, when fully extended, about half the lenth of the honey-tubes. Fore wings hyaline; stigma dusky yellowish, acute at the apex, which is opposite the middle of the stigmal vein. Stigmal vein in one regular curve. Discoidal veins of the hind wings nearly parallel; subcostal comparatively straight. Length 1.65–2.03 mm; to tip of wings 3.04–3.54 mm.

On *Ascelpias syriaca*. July, September, St. Louis, Mo. Montrose, Iowa. Rock Island, Ill. Cordova, Ill."

This is probably a variety of *Aphis asclepiadis*. Fitch, which I have placed in *Siphonophora*, on account of the frontal tubercles, and the rather long honey-tubes. As will be seen by reference to my description, some of the individuals are yellow. The honey-tubes of my specimens taper as do those described by Mr. Monell. The rather short antennæ and not very prominent antennæ tubercles, approach *Aphis*, but the characters taken together, appear to me to predominate in favor of *Siphonophora* as its appropriate genus.

I may also state here that the remarkable differences between specimens of the same colony, had I not found them feeding together, and evidently the progeny of the same "colony foundress," I would at once have decided they were different species. Some dark green, al-

most black, and of the usual ovate form, while others were pale, even to creamy yellow; the forms differ also widely, some being broad oval and much less convex than others. Some appeared almost hirsute. I noticed in the same colony, three different forms and colors. On this account I concluded the species which I had at first described as new, was but a variety of Dr. Fitch's species, and so I think with reference to Mr. Monell's species.

Siphonophora setariæ. Thos.

Aphis setariæ. Monell.

It is a matter of doubt to which genus this species belongs; the antennæ are situated on tubercular prominences which are quite distinct; but these are not closely approximate. The first joint is gibbous internally at the tip. The honey-tubes are rather long; the tail is also as is usual in *Siphonophora.* It is probable the species would be more correctly located if placed in *Myzus*, with which it agrees in several respects.

Aphis cephalanthi. Thos.

Mr. Monell remarks that he supposes the semicircular fourth vein suggested my comparsion of this species with those of *Callipterus.* In this he is mistaken for I do not use this character, which was suggested by Passerini. I compared it with *Callipterus* simply on account of the dark shadings of the veins, which is so common in that genus.

Aphis medicaginis. Koch.

Mr. Monell has discovered this little species on *Caragana arborescens*, *Robinia viscosa* and *Melilotus italica*, which is the first notice we have of it in this country.

It is distinguished by the almost uniform shining black color of its body; the pale yellowish-white antennæ and legs, the former dusky at the tips, the latter with the outer portions of the thighs, and tarsi black. Antennæ but little over half the length of the bodv; honey-tubes of medium length; wings hyaline.

Siphonophora salicicola. Thos.

Aphis salicicola. Monell.

There has evidently been an admixture of specimens received from Miss E. A. Smith, but this occurred before I received them. Some of

the specimens cannot possibly be placed in *Aphis* while others on further examination appear to belong to that genus as suggested by Mr. Monell. Until more specimens are obtained and this matter correctly determined, the name I originally gave had better stand.

Aphis cornifoliæ. Fitch.

Mr Monell gives the following description of the winged individual of this species:

"Head and thorax dusky; abdomen dark fuscous. Fore femora entirely yellow; hind femora yellow only at base; base of tibiæ yellow in all the legs; tarsi more or less dusky. Antennæ more or less dusky, as long as or a little longer than the body. Nectaries dusky, cylindric scarcely longer than the tarsi. Abdomen truncate. Style dusky, short but distinct. Wings hyaline. The stigma projecting somewhat above the margin, much as in *A. coreopsidis*, tapered abruptly at apex. Costa and stigma pale yellow; oblique veins dusky. Length 1.27 mm; to tip of wings 2.28 mm.

On the under side of leaves of *Cornus florida*, and *C. paniculata*, June—July; St. Louis Mo."

Aphis atriplicis. Linn.

Found on *Chenopodiaceæ* by Mr. Monell and Miss. Middleton.

Walker decides that this species is but a variety of *A. rumicis* Linn. Dr. Fitch appears to coincide with him in this opinion. Passerini considers them as distinct.

Aphis hyperici. Monell.

"*Winged individuals*: General color light reddish, covered with pulverulent matter; antennæ on short tubercles, a little longer than the body; third joint as long as the fourth, fifth and sixth taken together; apical joint about twice as long as the preceding. Wings hyaline; stigmal vein much curved; distance between the base of the cubitus and that of the stigmal vein equal to the distance between the apices of the lower forklet and the lower branch of the cubitus. Nectaries very short, only detected with difficulty. Tail reddish, little over half as long as the tarsi, slender and terete.

Length 1.06-1.27 mm; to tip of wings 1.77-2.28 mm. Living in colonies on the young twigs and under side of leaves of *Hypericum kalmianum*, to which species it seems to be confined. July, St. Louis, Mo."

Aphis helianthi. Monell.

"*Wingless individuals*: Varying from pale green to dark green, with various irregular and varable darker shadings on the abdomen, the most constant and conspicuous of which is a dark green transverse band on the segment above the nectaries. Nectaries dusky; style, at least the apical two-thirds, pale dusky.

Winged individuals—Head and thorax jet black; abdomen green, with a transverse band on the segment above the nectaries, and occasionaly with some darker spots on the margin. Antennæ two-thirds as long as the body, entirely black; third joint as long as the preceding taken together; fourth and fifth joints subequal. Nectaries subcylindric, pale dusky, hardly reaching the base of the style, and less than twice the length of the tarsi. Wings hyaline, venation normal Length 1.77 mm; to tip of wings 3.04-3.29 mm.

On the stems and leaves of Helianthus, St. Louis Mo."

Rhopalosiphum salicis. Monell.

"*Winged indiuiduals*—Head and thorax dusky; abdomen green, with various irregular, darker green markings. Antennæ about half as long as the body, not mounted on frontal tubercle; the third and fourth joints somewhat dentate; apical joint half as long again as the preceding; third and fourth joints often subconnate. Nectaries light green, reaching to the tip; the basal portion slender, expanding at the middle to twice its former diameter, and again suddenly contracted at the mouth, which is furnished with the usual annulus. Tail yellowish, about one-third as long as the nectaries.

Length 1.52 mm; to tip of wings 3.04 mm. Apterous individuals entirely pale green, with two darker dorsal vittæ.

On the under side of leaves of *Salix lucida*, *S. nigra* and *S. babylonica*."

Rhopalosiphum rhois. Monell.

"*Winged iudividuals*—Antennæ a little longer than the body, mounted on very inconspicious tubercles; joints proportioned as usual; seventh joint a little longer than the two preceding taken together. Nectaries three times as long as the slender style; the diameter of the apical two-thirds in normal specimens nearly twice the basal diameter; the apex contracted to about the same diameter as the base, and with the mouth very slightly flaring.

Length 1.52—2.02mm; to tip of wings, 3.81mm; on an undermined Sumac."

DREPANOSIPHUM ACERIFOLII. Thos.

Siphonophora acerifoliæ. Thos.

Mr. Monell, has followed my suggestion as to the possible position of this species and is perhaps correct.

The following in reference genera *Callipterus* and *Chaitophorus* and the species thereof is copied from Mr. Monell's paper without note or comment.

CALLIPTERUS. Koch.

Rostrum short.

Antennæ not on frontal tubercles, or else on very short ones, seven-jointed; transition from the sixth to the seventh joint very gradual.

Nectaries short, often scarcely preceptible.

Style short, enlarged at apex.

Wings deflexed; front wings with the stigmal vein much curved, not robust, usually more or less hyaline; cubital vein springing from near the base of the stigma; second discoidal sinuous.

Hind wings with two discoidals.

Body elongate, slender, of very pale colors.

Habits sporadic.

The genus seems the form a sort of transition between the *Aphidinæ* and *Lachninæ*, and should be placed in the former section principally on account of the shortness of the rostrum. Several divisions of *Callipterus* have been proposed, based on the relative length of the sixth and seventh antennal joints, but in such species as I have examined this character seems particularly variable and not deserving the importance which has been attached to it. In the species known to me, and probably in all European species, the wings are deflexed, but according to Fitch the species described by him have the wings horizontal. I was at first inclined to doubt the accuracy of this statement, but as it is a character very easy to observe, and as Dr. Fitch mentions it on two separate occasions, I do not see how he could possibly have made a mistake. Further investigation may possibly prove that his species do not appertain to this genus. As I have never been able to find viviparous apterous females, I consider it very probable that insects belonging to this genus acquire wings before producing living young.

A. Dorsum of winged individuals with spine-like tubercles *C. ulmifolii*, n. sp.

AA. Dorsum without spine-like tubercles.

a. Marginal cell dusky.

b. Middle tibiæ pale yellow. Femora pale yellow *C. walshii*, n. sp.

bb. Tibiæ black. Apical portion of femora black *C. bella* (Walsh).

aa. Marginal cell hyaline.

b. Wings with transverse, shaded bands.

c. Abdomen with conspicious dusky spots *C. discolor*, n. sp.

cc. Abdomen yellow, concolorus, or with very faint transverse bands *C. asclepiadis*, n. sp.

bb. Wings subhyaline.

c. Nectaries distinct.

d. Dusky shadings at tips of veins; a dusky mark at base of stigmal vein. *C. punctata*, n. sp.

dd. Wings hyaline.

e. Apical joint of antennæ a little longer than the sixth. Veins whitish. *C. hyalinus*, n. sp.

ee. Apical joint of antennæ three times as long as the sixth. First and second discoidals black *C. betulæcolens*, n. sp.

cc. Nectaries not perceptible.

d. Wings hyaline. *C. caryæ* n. sp.

dd. Veins bordered with brown. *C. quercicola* n. sp.

CALLIPTERUS ULMIFOLII. n. sp. Pale whitish-yellow.

Apterus individuals—Tubercular, with capitate hairs, which disappear when the insect acquires wings.

Winged individuals—Antennæ as long as the body; third, fourth and sometimes the fifth joint slightly dusky at apex; apical joint a very little longer or shorter than the sixth. Wings hyaline; all of the veins, and especially the stigmal vein, subhyaline. Dorsum with four long, spine-like tubercles on its basal portion, and with various shorter tubercles on the apical portion. Length 1.77mm; to tip of wings 3.04mm.

On the under side of leaves of *Ulmus americana*, May—June. Closely allied to the European *C. quercus*, which has also four dorsal tubercles.

CALLIPTERUS WALSHII. n. sp.

Winged form—Bright yellow. Antennæ, with the tips of joints 3 to 6, black; seventh joint more than twice as long as the preceding. Thorax with a lateral black vitta extending from the eye to the wing-insertions. Femora pale whitish-yellow; fore tibiæ black; middle tibiæ faintly dusky; hind tibiæ more duky than the middle pair. Tarsi and tips of tibiæ black. Nectaries yellowish, half as long as the tarsi. Wings hyaline. Front wings with the entire costa as well as its nervures black to the tip of the stigma, whence there extends a marginal dusky vitta, as wide as, or a little wider than, the costa at base and middle, but tapering at the tip and extending a little beyond the upper furcal of the cubitus. The stigmal vein lies entirely in this vitta, and curved

so as to make the width of the marginal cell just equal to the distance between the apex of the stigma and that of the stigmal vein. Hind wings with a dusky costal vitta extending to the tip of the wing. Remaining veins of both wings slender and pale dusky. Length 1.27 mm; width of abdomen 0.5mm; length of wing 1.77—2.03mm; to tips of wings 2.28—2.54mm.

May—July; St. Louis, Mo.

On the under side of leaves of *Quercus rubra.*

Very closely related to *C. bella* (Walsh), with which it has been hitherto confonnded.

Callipterus bella. Walsh.

Aphis bella, Walsh, Genera of N. Am. Aphidæ Phil. Ent. Soc. 1862.

In some specimens, a series of capitate hairs can be detected on the margin of the abdomen of the unborn larvæ, which can be seen through the sides of the abdomen of the viviparous females. The young of some individuals seem to lack these hairs. A similar case has been noticed by Professsor Riley in *Schizoneura fungicola?* (Walsh) in which the very young larvæ occur with and without capitate hairs. These hairs, on being very highly magnified, appear to be hollow, with a funnel-shaped opening at the apex.

Length 2.51—3.04mm; of wings 3.55—3.81mm, to tip of wings 4.06—4.31mm.

Callipterus asclepiadis. n. sp.

Winged form—General color yellow. Antennæ filiform, mounted on very short tubercles, as long as, or a little longer than, the body; apical joint much longer than the preceding. Nectaries yellowish, short.

Apterous individuals—With capitate hairs, which disappear when the insect acquires wings; abdomen somewhat tubercular.

Winged individuals—Wings blotched with dusky or dusky brown; an irregular broad band running from the apex of the second discoidal to the apex of the upper forklet, and another running from the apex of the first discoidal towards the base of the cubitus, but becoming obsolete before reaching that point. Stigma short, abruptly tapered at apex. Distance between the tips of the first and second discoidals one-half that between the tip of the second discoidal and the lower cubital branch. Distance between the base of the cubitus and the base of the stigmal vein nearly equal to the distance between the apices of the lower forklet and the lower branch of the cubitus. Length 1.27—1.52mm; to tip of wings 2.54mm.

May—August.

Very common at St. Louis on *Asclepias cornuti* and *A. obtusifolia.* This is the first species belonging to this genus which has been found on a herbaceous plant.

CALLIPTERUS DISCOLOR, n. sp.

Winged form—Abdomen greenish or yellowish, with four rows of irregular brownish spots, often with smaller dots between them, the two middle rows becoming confluent just above the nectaries. Antennæ with the sixth joint less thau the seventh. Wings with irregular dusky bands arranged similarly to those in *C. asclepiadis*. Length 1.77mm; to tip of wings 3.29mm.

Under side of leaves of *Quercus bicoler*. St. Louis, Mo., May.

CALLIPTERUS PUNCTATA. n. sp.

Winged form—General color pale yellow; abdomen with faint dusky shadings, representing the dots of the preceding species. Sixth joint of the antennæ much less than the seventh. Wings hyaline, except dusky markings at the tips of the second discoidal, cubital, and stigmal vein, and a dusky mark at base of stigmal vein. Length 1.52—1.77mm; to tip of wings 3.04—3.29mm.

On the under side of leaves of *Quercus bicolor*. May—June, St. Louis, Mo. It is possible that this is merely a variety of *C. discolor*, but I have never succeeded in finding intermediate forms.

CALLIPTERUS HYALINUS, n. sp.

Winged form—General color pale yellowish. Apterous individuals with the usual capitate hairs. Seventh joint of the antennæ longer than the preceding. Wings hyaline, without any markings, or with a scarcely perceptible shading at the tips of the wings. Stigma rather long, the distance between the base of the stigmal vein and the base of the cubitus being much greater than that between the tips of the lower forklet and lower cubital branch. Basal two-thirds of the stigmal vein subhyaline. Second discoidal not so much curved as in *C. punctata*. Length 1.77—2.02mm; to tip of wings 3.04mm.

On the under side of leaves of *Quercus imbricaria*, to which species I believe it is confined. May—June, Saint Louis, Mo.

CALLIPTERUS BETULÆCOLENS, n. sp.

Aphis betulæcolens?, Fitch, N. Y. Catl. Hom. p. 66.

Winged individuals—General color yellow; antennæ, first and second joints entirely yellow, the apical half of the remaining joints more or less dusky. Dorsum uniform yellow, without tubercles; wings

hyaline; costal and subcostal veins whitish; first and second discoidals black. Stigma yellowish; basal two-thirds of the stigmal vein obsolete; apical portion hyaline, subobsolete. Nectaries yellow, a little fuscous, fully as long as the tarsi. The rostrum barely reaches the middle coxæ. Length 2.02mm; to tip of wings 3.81mm.

On the under side of birch leaves. June, Saint Louis, Mo.

Dr. Fitch's description of *A betulæcolens* is not sufficiently exact to enable one to recognize the species. It is, however, probable that it is distinct, as the measurement he gives would make his species slightly larger than the present one; besides, were they identical, it would be rather singular that Dr. Fitch should omit to mention the obsolete stigmal vein, and at the same time be at the pains to mention that the base of the cubitus was hyaline.

I am unacquainted with *Calaphis betulella* Walsh; but unless there are other distinguishing characters, the mere absence of the stigmal vein will not be sufficient to separate *Calaphis* from *Callipterus*, as there is a complete series of transitions between the two.

CALLIPTERUS CARYÆ, n. sp.

Winged form—General color, pale yellow; tips of the antennal joints black; legs entirely pale whitish. Antennæ a little shorter than the body; seventh joint equal to or one-third longer than the preceding; fifth joint as long as the two following, taken together. Nectaries not perceptible. Rostrum not reaching to the middle coxæ. Wings hyaline; veins pale; stigma rather short and blunt at apex. Stigmal vein subobsolete, its course being only traced with difficulty. The distance between the apex of the lower cubital branch and that of the second discoidal equal to about one-half the distance between the apices of the first and second discoidals. Apterous viviparous females and pupæ with four longitudinal rows of tubercles, each mounted with a capitate bristle.

Leaves of Walnut, Hickory, and Pecan. June—July. Saint Louis, Mo.

CALLIPTERUS? QUERCICOLA, n. sp.

Winged from—Antennæ about half as long as the body; not mounted on frontal tubercles; remote at base; third, fourth, and fifth joints equal in length; transition from the sixth to the seventh joint exceedingly gradual; seventh joint about half as long as the preceding. Rostrum short, not reaching the second coxæ; apical joint very acute. Nectaries reduced to mere openings. Style none. Wings with the veins bordered with brown. Stigma rather short, and blunt at apex; the cubital vein arising from its base. Stigmal vein not so much curved as usual in this genus, not hyaline; distance between the base of the cubitus and that of the stigmal vein equal to the distance between the furcals and less than the distance between the base of the cubitus and that of the second discoidal. Second discoidal not sinu-

ous. Body rather elongate. Length 1.77mm; to tip of wings 2.79mm.

It is with considerable doubt that I place this species in the genus *Callipterus*. It is very probable that it should be placed under *Asiphum*; but the only description of this genus which has been published is that given by Koch, and, like the other generic descriptions which were made from memory after the loss of his eyesight, is somewhat unsatisfactory. The following is a translation of the salient points in his description:

Asiphum, Koch.—"Beak short. Antennæ rather short, the third, fourth, and fifth joints subequal, the apical joint very small, scarcely perceptible." Of this interesting species, I have only seen two winged specimens, mounted on a slide, which was communicated by a correspondent with the information that it occurred at Saint Louis, on Oak.

CHAITOPHORUS. Koch. (emend).

Similar to *Aphis*, but with the antennæ and body distinctly pilose. Style tubercle-like.

Chaitophorus viminalis. n. sp.

Apterous individuals.—Varying from pale green to light yellow, with two darker vittæ on the abdomen, which are often obsolete. Entire insect covered with long white hair.

Winged individuals—Head and throax black; abdomen black, except the margins and style, which are yellow. Nectaries a little longer than thick, yellowish, often slightly fuscous. Antennæ hairy; seventh joint filiform, almost as long as the three preceding taken together. Wings hyaline. Length 1 52mm; to tip of wings 2.54mm.

On young twigs and leaves of *Salix lucida* and *S. babylonica.* The venation of the wings is exceedingly variable; in one abnormal specimen I have observed a robust transverse vein running from the middle of the second discoidal to the base of the lower branch of the cubitus, thereby forming a closed trapezoidal cell.

Chaitophorus smithiæ. n. sp.

Winged form—General color dusky reddish. Wings hyaline; vena- very variable. Nectaries two-thirds as long as the tarsi, vasiform, contracted at the base, expanding in the middle, and again contracted

the apex; the mouth flaring. Antennæ a little over half as long as the body, the third joint the longest, the fourth and fifth subequal, and the sixth joint two-thirds as long as the preceding. Seventh joint slender, very little longer than the proceeding. Rostrum reaching the third pair of coxæ. Length 2.28mm; to tip of wings 4.56mm.

On leaves of *Salix alba.* May—June. Peoria, Ill. (Miss E. A. Smith).

This species comes under *Cladobius* Koch, a genus which does not seem sufficiently distinct from *Chaitophorus.*

Though the shape of the nectaries is very remarkable, it seems to me scarcely sufficient to justify a generic separation.

CHAITOPHORUS QUERCICOLA. n. sp.

Apterous individuals—Dorsum greenish, with four rows of short tubercles, all of which. except a few in the side-rows, are black; their apical circumference with from three to five bristles; the two middle rows of tubercles stop at the head, but the two lateral rows are continued by smaller tubercles until near the base of the labrum. Rostrum reaching the second coxæ. Nectaries yellow, about as long as the tarsi, slightly enlarged at base, the mouth conspicuously flaring. Style not perceptible.

Winged individuals.—Antennæ very slightly pilose; fourth joint sub-equal to the fifth and two thirds as long as the third joint; sixth about half as long as the preceding, and very little longer than the seventh. Wings, with the stigma and veins much as in *Ch. populicola;* the veins lying in narrow dusky bands. Length of apterous individuals 1.52—2.02mm; length of wing 2.54mm.

On the under side of the leaf near the midrib. *Quercus prinus* May—June. Peoria, Ill. Of this interesting species, I have seen a number of apterous individuals, but only a single winged specimen, which was mounted on a slide, kindly communicated by Miss E. A. Smith, of Peoria, Ill. The dorsum of the winged individual is probably not tubercular, but this cannot be decided with certainty on account of the manner in which the specimen is mounted.

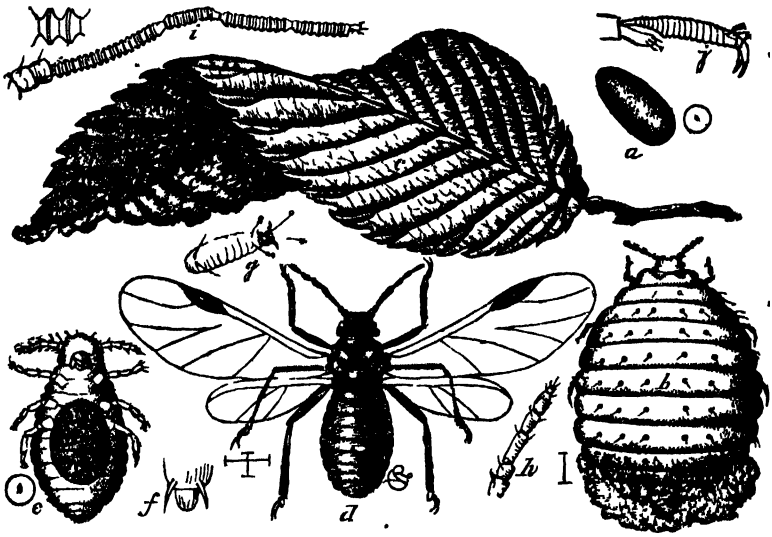
Though the antennæ of this species are not sufficiently pilose to justify its being placed in *Chaitophorus*, its general appearance seems to point to this as its rightful position.

In his portion of the paper named Prof. Riley describes some new species of *Pemphiginæ* and gives more complete descriptions of some which have been heretofore named, as follows:

Schizoneura Americana. Riley. (Fig. 44.)

Impregnated egg (fig. 44, *a.*) 0.5 mm long, gamboge-yellow, inclining to brown in color, with no special external sculpture.

Fig 44.



"*First generation.*—Stem-mother: Pale yellowish red, with black members when first hatched; the red deepening and becoming purplish or livid with age. When mature, averaging 3.5mm in length, globose or pyriform, with subobsolete honey-tubes and six dorsal rows of darker piliferous and tuberculous spots. Antennæ 5-jointed, joint 3 more than equaling 4 and 5 together in length.

"*Second generation.*—Differing in no essential respect from the preceding, except that the individuals do not attain so great a size. Bright brownish-red when born, they soon become livid brown.

"*Third generation.*—Mature, winged female: Alar expanse 5 to 5.6 mm. Body dusky, the abdomen slightly reddish; legs either dusky or yellowish-red. Antennæ as long as head and thorax together, dusky, rarely yellowish; not pilose, but with a few short setous points; 6-jointed, the 1st and 2nd joints slightly bulbous; 3rd either surpassing or equaling in length the 4th, 5th, and 6th together, which are subequal; the terminal joint usually the shortest, the apical sub-joint being normal, and in some cases sufficiently constricted to resemble an additional joint; joints 3, 4, and 5 rather distinctly annulated, the constrictions being generally quite deep, and producing a moniliform aspect, there being on an average 22 such on joint 3. Tarsi with the basal joint distinctly separated into a lobe, the claws strong, and in length twice the diameter of the tasus. Wings hyaline: front pair with the veins becoming obsolete at tips; stigma subhyaline, either of a yellowish tinge or somewhat dusky;

stigmal vein starting from the middle of the stigma and normally curved; cubital vein obsolete for nearly one-third its length, the furcal forming with it almost a point; the terminal distance between first and second discoidals equal to about five times that between their bases (often rather more); terminal distance between fureal and cubital and second discoidal veins subequal, that between stigmal and furcal slightly shorter, that between second and first discoidal one-third greater, and about equal that between stigmal and tip of stigma. Hind wings with the subcostal vein almost straight, there being no curve where it gives off the discoidal veins, which are obsolete at their extreme base, and not confluent with it. [The wing-venation is very constant. Out of of nearly 100 specimens examined, I have found only an unusual shortening of the cubital in two individuals.] The larva and pupa in this third generation differ from the winged insect in being more reddish and in having the antennæ ringed with less distinct constrictions, in the legs being paler, in the claws being stronger, and in the basal joint of tasus being more connate with the terminal joint. They have a distinct annulated elevation at each side posteriorly—a sort of pseudo-honeytube. When first born, they are of a pale dull yellow, and the antennal joints are more nearly subequal in length.

Fourth generation.—That from the first winged females: Differs from the preceding in the promuscis being much longer, in the antennæ having but five joints, the third being somewhat longest and the first shortest, but all often being of more nearly equal length, with no annulated constrictions. The color is much more decidedly orange. When newly hatched, the thickened end of the promuscis often extenps one half the length of the body beyond anus The legs are also long and stout, and the basal joint of the tarsus is distinct, but not separated. The capitate hairs are obsolete. It is born with an enveloping pellicle or pseudovum, and though of a bright red with pale legs at first, soon becomes brownish, with dark members.

"*Fifth generation.*—The counterpart of the second.

"*Sixth generation.*—Second winged: Resembles the third, but usually rather lighter-colored with the wing-veins, the spinous armature of surfaces, and the constrictions of antennæ less strong, and with the third joint of antennæ rather less in length than the terminal three together.

"*Seventh generation.*—True sexual individuals: Born within an egg-like pellicle. With stout promuscis reaching to between middle and hind coxæ; the antennæ 5-jointed, with the joints subequal. Bark-feeding. Orange in color. Undergoing one moult, and then being at once distinguished from the other forms by the brighter orange-yellow color, the rudimentary mouth, the more simple eyes (composed of three facets), by the shorter, 5-jointed antennæ, the joints subequal in length; by the shorter legs, with smaller claws to the tarsi, and more distinct terminal capitate hairs, or pulvilli. The skin is transparent, the body filled more or less with fatty globules. The female is nearly pyriform, and averages 0.4mm in length. A single egg is visible through the translucent skin, and, according to age, occupies more or less of the whole of the body. The male is narrower and smaller, the penis being bulbous, with a couple of spine-like genital clasps."

This as admitted by Prof. Riley is very closely allied to *Schizoneura ulmi* Linn, and it is doubtful whether it should be considered as distinct.

GLYPHINA ULMICOLA, Fitch.

Byrsocrypta ulmicola, Fitch, 4th N. Y. Rep 1858, p. 63 (§ 347).—*Thelaxes ulmicola*, Walsh, Proc. Ent Soc. Phil vol 1, p. 305, 1862; American Entomologist, vol. 1 p. 108, 1869.—*Colopha ulmicola*, Monell, Canadian Entomologist, vol ix, p. 102, 1877.

"*Impregnated, or winter egg.*—Length, 0.38mm, perfectly ovoid, shining olivaceous, inclining to brown, with no particular sculpture.

"*First generation, or stem-mother.*—0.4mm long when hatched. Antennæ 4-jointed; joints subequal in length and thickness, but with the bases of hairs rather strong. Promuscis very short, reaching only to middle coxæ, or a little beyond. Upper tarsal hairs globate at tip, and as long as tarsus. Smooth, dark olive brown in color, with black members. After first molt the beak is still relatively shorter, as also the tarsal hairs; the color is paler, but the members are still black. She measures 1mm in length when beginning to bear, and the third joint of antennæ is then somewhat clavate, and as long as joints one and two together; the fourth narrower, as long as third, and rather truncate at tip, with two rather conspicuous piliferous prominences. Color, translucent yellowish green, often inclining to purple.

"*Second generation.*—0.4mm long when born; nearly five times as long as wide; the antennæ short and 5-jointed, the joints sub-equal in length, the third shortest and narrowest, the 5th swollen and sub-fusiform, with rather strong bulbs at the base of the hairs. Promuscis reaching to hind coxæ. Distinct globate tips to the four tarsal hairs. Color pale olive green, with black members and a dusky stripe on the notum. *Pupa* with antennæ smooth, 6-jointed, joints subequal in thickness, joint 4 only as long 2; 5 and 6 each twice as long; 3 four times as long. Color, dingy orange, with a paler band around the thorax, embracing the wing-pads, and reminding one, on this account, of the pupa of *Phylloxera*.

"*Winged female:*—Average expanse 3.7mm; the form of body more as in *Phylloxera*, the abdomen tapering and narrower than the thorax bearing from ten to twenty pseudova. Blackish, with an olive green tint, the abdomen and under surface yellowish-green in the fresher individuals. Antennæ reaching only to insertion of front wings, 6-jointed; joints, 4, 5, and 6 subequal, and together equal to 3 in length. [Three specimens examined have joints 4 and 5 very imperfectly separated, causing the antennæ to appear as 5-jointed.] Wings as described by Walsh, the stigma being well rounded and pale. [In three specimens examined, the third discoidal of the front wing is simple and precisely as in *Pemphigus;* in one specimen, the first discoidal is wanting on both front wings, and in another the fork of the third discoidal is wanting on the left one.] Basal joint of tarsus rather short; tarsal claws only moderately strong.

"*Third generation.*—The young from the winged female, after being freed from the pellicle in which they were born, have stout five-jointed antennæ, the joints subequal; stout but short promuscis reaching to

hind coxæ; rather large compound eyes. Proportions and shape of young *Phylloxera*.

"*True female:*—Legs short and the basal joint of tarsus rudimentary; antennæ short, four-jointed, smooth, joints subequal, the third somewhat longest. Mouth rudimentary. Described from skins surrounding impregnated egg. Males unknown."

Pemphigus populi-monilis. Riley.

"*Winged female* (Fig. 45, a):—Average expanse 6 5mm. Black, the abdomen a little lighter, especiall, at the tip. Finely powdered with white; broad across the shoulders, the scutellar lobes of the mesonotum being rather more flattened than the præscutum; the head rather small

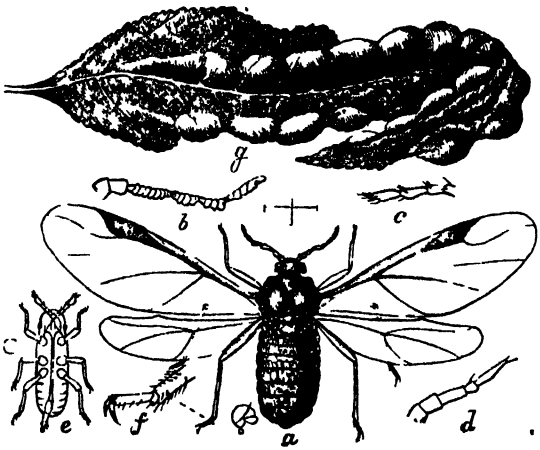


Fig 45.

and narrow. Antennæ (Fig. 45, *b*) and legs rather short, the former reaching only to base of front wings; 6-jointed; joints 1, 2, 4 and 5 subequal in length; 3 twice as long; 6 not quite as long as 3. Joints 1 and 2 very stout; 3, 4 and 5 somewhat clavate; nearly smooth above, but with about twelve deep constrictions beneath. Legs normal, with basal joint of tarsus (Fig. 45, *f*) tolerably well separated, and unguis stout. Wings subhyaline; front wings with stigma strongly angulate, dusky, the lower portion almost black. Veins dusky, the costal and subcostal stout and darkest. Stigmal vein undulate, starting from a little beyond the middle of stigma. First and second discoidals almost connected at the base [in three specimens entirely so], and the distance between them at tips about one-third greater than between 2d and 3d discoidals, and that between these two subequal with that between the last mentioned and stigmal; the 3d discoidal obsolete toward base. Fold of hind border but moderately thick. Hind wings ample, the hook-angle but moderate, the subcostal slightly undulate

and considerably elbowed at basal third, whence spring the discoidals, the first bending slightly toward posterior margin, the second toward costal margin, the spaces between the tips of the costal and the discoidals subequal, and together rather more than half of posterior border. [An examination of fourteen specimens only showed one with the third discoidal forked on both wings, and another with the same vein forked on the left wing, and the second discoidal also forked near tip.] When newly hatched, or in the first age, the basal joint of tarsus is scarcely perceptible, and the tarsal hairs are simple; the antennæ (Fig. 45, *c*) are 4-jointed, the basal joint half as long as the 2d; 3d and 4th somewhat longer and subequal; the 4th suddenly narrowed at tip; the promuscis reaches beyond hind coxæ. After first molt, the antennæ (Fig. 45, *d*) are 5-jointed, the 4th very short and almost globular; the promuscis now reaches to the middle coxæ only. In the pupa state, the antennæ are 6-jointed.

Young from winged female similar to the same stage of its parent, except in the promuscis reaching beyond anus (Fig. 45, *e*). Length 0.15mm.

Throughout Central Colorado, July (Riley); Southern Kansas (Monell).

This species forms a very interesting gall, which may be called the bead-like cotton-wood gall, occurs on the narrow-leaved cotton-wood (*Populus balsamifera*, L., var. *angustifolia*, Torrey), during the summer, in Colorado, and probably wherever this narrow-leaved variety grows. Though I have often found the tree in question so covered with these galls, especially at Greeley, that not a leaf was exempt, yet *Populus monilifera*, even when growing along the bank of the same irrigating ditch and mingling its branches with *angustifolia*, would be entirely free from them. The galls when not very numerous appear most commonly on the terminal leaves of a twig. They form a confluent series of pale yellow ovoid swellings, each side of the midrib (Fig 46, *g*) recalling, in the distance, a lot of unripe cherries, or, again, the galls produced on a true willow by the Saw-fly larva—*Nematus salicis-pomum*, Walsh. There will sometimes be three rows of these swellings, and they are not infrequently tinted with red. There are, however, more often but two rows, occupying nearly the whole space each side of the midrib. The galls are formed by the folding under of the sides of the leaf and the bulging of the same around the insect, which is always found solitary."

Hormaphis spinosus. Shimer.

"*Hamamelistes spinosus*, Shimer, Trans. Am. Ent. Soc. i, p. 284, 1867.

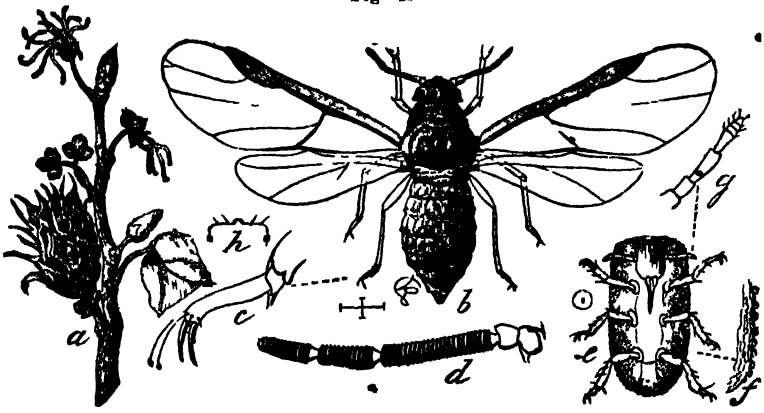
Winged female (Fig. 46, *b*): Expanse 5mm. Color dark brown, uniformerly pulverulent, the abdomen slightly paler and filled with egg-like bodies. Head with a frontal tubercle, and with the promuscis not reaching to beyond front coxæ. Antennæ (Fig. 46, *d*) reaching to base of front wing; 5-jointed, joints 1 and 2 bulbous and smooth, the others with about 50 close and regular and well-defined annulations;

joint 3 six times as long as 1 and 2 together; joints 4 and 5 each half as long as 3, the terminal joint not being narrowed at tip.

Thorax with the pronotum welled defined, mesonotum having a thickened anterior border, with two small angles in front; the scutellar lobes and and præscutum small. Tibiæ with a lobe each side at juncture with tarsus, the basal joint of tarsus not distinctly separated and the tip furnished with two superior, knobbed hairs. Wings hyaline, the stigma and costal area fuliginous, the stigma pointed, but only slightly broadened; first discoidal almost transverse, second do, starting from it at upper third; cubital running straight toward base of first discoidal, but usually obsolete at basal half; terminal space between second discoidal and cubital wider than between it and the stignal. Hind wings with the hooks strong, the costal vein straight, and a single discoidal, the first being obsolete. [Out of 20 specimens examined, I find the basal portion of the first discoidal of front wing connecting with the second at base, either on one wing (2 specimens) or on both wings (4 specimens), and in two cases this fiast discoidal is complete on one wing and incomplete on the other.] *Larva* quité broad and squarish anteriorly, with a frontal tubercle (Fig. 46, *h*), and with the antennæ four-jointed; promuscis reaching to hind coxæ; color brown, with mesonotal lobes more yellowish. Transverse dorsal rows of four piliferous spots are faintly observable. Antennæ after first molt five-jointed, and promuscis hardly reaching to middle coxæ. *Pupa* with similar antennæ and somewhat shorter promuscis.

Young from winged female (Fig. 4, *e*); Resembling the larva of preceding generation, but distinguished by the absence of frontal tubercle, and by having the surface, except mesio-ventrally, evenly and conspicuously granulated. The terminal joint of antennæ also shows some constrictions (Fig. 46, *g*).

Fig 46



This forms a gall (Fig. 46*a*) on the stems of the witch-hazel which gall is a deformation of the flower-bud, the puncture of the architect causing premature development, by which the calyx, bractlets, and petals are all changed into elongate bracts, more or less pointed terminally, and more or less completely soldered together at bases, so as to form a thin wall. In August, the gall is green and crowded inside with lice in all stages of growth, from the newly-born to the pupa

and winged female, intermixed with floculent matter and watery globules, the insects themselves being rather evenly covered with a fine white powder. Later in the season, the tips of the bracts become blunter, and the gall becomes browner, and recalls externally the fruit-pod which would have developed the ensuing year. It is now perforated at some point, generally near either the top or base, and through the aperture the insects have either made their exit or may be noticed doing so. The young from the winged female are quite characteristic, being strongly granulated, and, as they were found as late as the end of October, they probably hibernate on the permanent parts of the tree. The sexed individuals and the stem-mother are yet unknown. The species was first described in 1867 by Dr. H. Shimer of Mt. Carroll, Ill., who erected a new genus for it and another well-known species on the same plant, not aware that the genus had been previously characterized by Baron Osten Sacken, in 1861."

PEMPHIGUS POPULI-TRANSVERSUS. Riley.

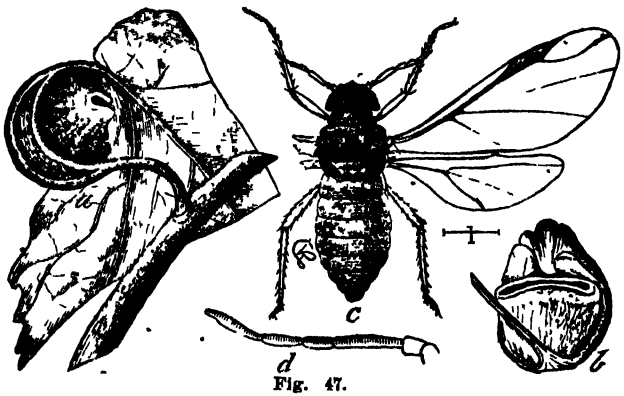


Fig. 47.

"[Gall (*populi-transversa*, Fig. 47,) formed upon the petiole near the base of the leaf of *Populus monilifera* and *P. balsamifera*. An elongate-oval swelling, causing the curving and broadening of the petiole, and opening on the opposite side by a transverse slit, with a whitish, slightly thickened, and elevated margin, recalling human lips. By the latter part of June the stem-mother is surrounded with young of various sizes, all covered with the usual white secretion and mixed with the liquid globules. Winged females produced in autumn, sometimes not until the leaves have fallen.]

Winged female (Fig. 47, *c*).—Expanse, 7mm. Pruinescent, with the abdomen more yellowish, inclining to green. Antennæ (Fig. 47, *d*) reaching a little beyond the base of front wings; smooth; joints three, four and five cylindrical, and of equal thickness; three as long as the other two together; six more slender at base, and with the apical unguis nearly as long as three. Thorax with mesonotal swellings small. Terminal distance between first and second discoidal veins of

front wings nearly equal to that between this last and the stigmal vein; discoidals almost connected; cubital obsolete at base; subcostal heavy; stigma scarcely wider than subcostal space, acuminate at tip, and with the vein starting a little in front of its middle. Hind wings with the discoidals connected at base, where the subcostal is slightly produced. Legs normal. Abdomen showing about thirty pseudova, and with four dorsal rows of faint piliferous dots. *Pupa* with joints one, two, four and five of antennæ subequal in length. The wingless forms are pale, creamy yellow, with faintly dusky members.

Missouri, Southern Texas, and Colorado (Riley). May possibly be *popularia*, Fitch, the description of which does not admit of identification.

This gall occurs all over the West and Southwest, and while it normally occurs in the position and of the form described, it may occur on any part of the petiole, and the opening may be more or less oblique, or form a mere circular hole. Sometimes two and even three coalesee. The lip-like bulging is, however constant."

Pemphigus populi-ramulorum. Riley.

"[Formiug an irregular globular gall (*populi-ramulorum*), often somewhat flattened, on the twigs of *Populus balsamifera* in Colorado. The gall averages 15mm in diameter, and opens in a suture sometimes transverse, sometimes oblique, but more often longitudinal with the axis of the twig, exceptionally the opening is round and bulging. Green when fresh, it becomes gray and woody with age.]

Winged female—Alar expanse 6.8mm. Black and pruinescent, scarcely distinguishable from *populi-traversus*, except by the more annulate antennæ, the 4th, 5th, and 6th joints of which are much narrowed at base. The 6th joint (including subjoint), scarcely as long as 3d. The pupa is yellowish, with black eyes, and pulverulent.

Colorado (Riley).

Several of the species of *Pemphigus* forming galls upon *Populus* so closely resemble each other that they could not well be seperated as species were it not for the differences in the galls they produce. Future careful investigation may show that the same species will produce different abnormities. and be slightly modified in appearance according as it affects different parts of the plaut; but until we have such proof, the presumption is that the different galls are produced by distinct species, however similar the architects are in general appearance."

Pemphigus acerifolii, Riley.

"[Living in abundant and long cottony excretion, on the under sidg of the leaves of *Acer dasycarpum*, causing them to curl, and exudine an abundance of thick and very glutinous "honey-dew."]

Winged female.—Alar expanse 10mm. Head and thorax bluish-black. Abdomen black, covered with long cottony threads. Antennæ reaching the wing-insertions; annulations not conspicuous; joints 3, 4, 5 and 6 somewhat contracted at base and apex; apical unguis not perceptible; joints 5 and 6 subequal; 4 distinctly clavate; 3 as long as the two preceding together. Wings subhyaline, of a whitish tinge; subcostal vein and the inner margin of the stigma black; oblique veins whitish, stigma short and broad, not angled at the base of the stigmal vein, which starts from a little behind its middle, and is comparatively straight thereby making the apical cell rather narrow. Terminal distances between the veins sub-eqnal that between 2d discoidal and cubital somewhat greatest; basal one-third of the cubitus hyaline, but not abortive, as it can usually be traced to its base, which is very close to that of the second discoidal; bases of the two discoidals either approximate or quite contiguous; discoidals of the hind wings preceding connectedly from the subcostal vein. Larva with 5-jointed antennæ and the promuscis extending beyond tip of abdomen.

June—July; St. Louis, Mo. (Riley); Clinton, N. J. (Prof. W. D, Robbins)."

Pemphigus fraxinifolii. Riley.

"[Infesting the terminal leaves of *Fraxinus americanus* and *F. sambucifolia* from spring till late summer, and producing a twisted curl thereof; the young lice varying in color from deep glaucous to livid, very flocculent and exuding the liquid globules quite copiously. Winged females appearing early in June.]

Winged female: Alar expanse 5.7mm. Head and thorax dusky; abdomen dark green; antennæ reaching by the length of the apical joint beyond costal base of front wings; inconspicuously annulated and with joints 3—6 but moderately narrowed at base; joint 3 as long as 4 and 5 together; 6 (including unguis) nearly ¾ as long again as 5, with the unguis distinct and of normal length. Scutellar lobes of mesonotum broad and well marked. Legs normal. Wings hyaline; stigma linear, or not wider than subcostal space, yellowish and poorly defined anteriorly; veins very slender and sub-hyaline, the stigmal most distinct, starting a little in front of middle of stigma, and but faintly curved; cubital almost invisable, but not obsolete at base, where it nearly joins the 2d discoidal. Terminal spaces between 1st and 2d discoidals, and between this last and cubital, subequal; that between cubital and stigmal only half as great. Discoidals of hind wings proceeding connectedly from sub-costal. Promuscis reaching beyond front coxæ; abdomen with 7 rather large roundish spots each side, each sending out 2 hairs. [In some specimens the cubital starts independently from the subcostal; in others it joins the 2d discoidal a short distance from base]. *Pupa* with the 3d joint of antennæ relatively somewhat shorter.

Larva of probable second generation: Antennæ smooth, 4-jointed; joint 3 somewhat longer than 4, and as long as 1 and 2 together: apical nipple 1-6th as long as the 4th joint. Promuscis slender, reaching beyond hind coxæ. Legs rather long and stout. Tibiæ, tarsi, and

anal joints of abdomen with a few conspicuous hairs. Full grown, apterous female, probably of this same generation, differs in having 6-jointed antennæ, proportion much as in the winged female.

Larva from winged females; probable fourth generation: Antennæ 5-jointed; joints 1, 2, 3, 4, subequal in length; 3, 4, stourter; 5 very shourt and rounded at tip. Promuscis very long, reaching beyond tip of abdomen.

Tolerably common at Saint Louis, Mo. (Riley, Monell); Sauk City, Wis. (Thomas).

The life-history of this insect has not been fully studied, as the sexed individuals, and the winter egg have not been observed. It will doubtless be found to agree in most particulars with that of *Schizoneura americana.*

The species stand somewhat in the same relation to the European *Pemphigus fraxini* (Fabr.) as does *Schizoneura americana* to *S. ulmi*, The European species is larger, with the wing-veins differently placed, and inhabits the twigs and stems, instead of the leaves; but otherwise there is a good deal of resemblance between the two."

This is undoubtedly the same species that I have described under the same name in the preceding part of this report. As Prof. Riley's description was published first, his name must stand as author of the species.

The following list of species of plant-lice described by Haldeman and Rafinesque is taken from a note in Mr. Monell's paper. As I have not acess to the works of these authors I am unable to give the descriptions or to assign the species to their proper positions.

Aphis rubecula Haldm. Proc. Bost. Soc. Nat. Hist. vol. i, p. 168, 1844.

Aphis bicolor Haldm. l. c. p. 168.

Aphis marginipennis Haldm. l. c. p. 168.

Aphis pilosa Haldm l. c. p. 169.

Aphis discolor Haldm. l. c. p. 169.

Aphis verticolor Raf. Am. Monthly Mag. and Critical Review, i, p. 361, 1817.

Aphis furcipes Raf. l. c. i, 361.

Aphis rhodryas Raf. l. c. iii, 15, 1818.

Aphis diplepha Raf. l. c. iii, 15.

Aphis oreaster Raf. l. c. iii, 17.

Aphis gibbosa Raf. l. c. iii, 17.

Aphis xanthelis Raf. l. c. iii, 17.

Aphis annulipes Raf. l. c. iii, 17.

Aphis ambrosia Raf. (nec Thos). iii, 17.

Aphis acaroides Raf. l. c. iii, 17.

PSYLLIDÆ.

Since the foregoing report was placed in the hands of the printer, I have obtained a copy of the Transactions of the Entomological Society of London for 1876, containing a "*Monograph of the British species*

of Psyllidæ," by Mr. John Scott. For the benefit of those who may desire to investigate this interesting group of insects, I insert here the author's synoptical table of genera.

Brief Synopsis of the Genera.

A. Face produced into two lobes of greater or less length; antennæ 10 jointed; 1st and 2d joints short, stout, remainder filiform; 3d generally longest.
  a. Elytra coriaceous; costa without a stigma; cubitus petiolate *Livilla.*
  aa. Elytra membranaceous.
  b. Apex of elytra rounded.
  c Costa without a stigma; cubitus petiolate. *Arytaena.*
  cc. Costa with a stigma; cubitus petiolate. *Psylla.*
  bb. Apex of elytra lanceolate.
  c. Costa with a stigma; cubitus petiolate. *Spanioneura.*
  cc. Costa without a stigma; cubitus not petiolate. *Trioza.*

AA Face not lobate. antennæ 10-jointed; first and second joints (except in *Livia*) short, stout, remainder filiform; 3d generally longest.
  a. Elytra membranaceous; apex rounded. *Aphalara.*
  aa. Elytra coriaceous; more or less lanceolate.
  b. Costa with a stigma; cubitus petiolate. *Rhinocola.*
  bb. Costa without a stigma; cubitus petiolate. *Livia.*

INDEX.

I INDEX TO PLANTS

This index is in two parts First Index to the plants mentioned, second, general index exclusive of plants

PAGE

Abies nigra 117
Acer dasycarpum 209
pennsylvanicum 49
pseudo platanus 79
Achyrantes 187
Acorus calamus 14
Alder 118, 139
Almond 102
Alnus rubra 139
Ambrosia psilostachya 50
trifida 49, 190
American larch 117
Apocynum cinnabinum 94
Apple tree 85 86 126
Aquilegia 83
Artemesia absinthium 69
Asclepias cornuti 58, 197
obtusifolia 197
syriaca 191
Ash European 147
Aspen 149
Aster 99
Atriplex 88
hortensis 88
Balm of Gilead 105
Balsam poplar 153, 174
Barberry 82
Barley 51
Bean 88
Bed-straw 88
Beech 120, 139 140
Bidens chrysanthemoides 190
Birch 110, 199
Blackberry 17 18, 64, 121
Black spruce 117
Bottle grass 56
Box elder 103
Bramble 64
Broom 64 69
Dyers 88
Burning-bush 88
Burr oak 108
Button bush 97
Cabbage 91
Cacalia suaveolens 190
Calendula micrantha 100, 190
Canada flea-bane 58
Capsella bursa-pastoris 98, 98
Caragana arborescens 192
Carices 191
Carnation pink 80
Carya alba 162, 164
amara 164
glabra 163 164
porcina 116
Cerasus vulgaris 75
Ceratochlora australis 139
Chenopodiaceæ 193

PAGE.
Chenopodium album 88
Cherry, Garden 75
Choke 93
Chestnut 114, 164
Choke cherry 93
Cirsium altissimum 100
arvense 187
Cockscomb grass 56
Coreopsis aristosa 59
Corn 89, 122
Cornus florida 193
paniculata 101, 193
Cottonwood 104, 149, 151
Cranberry, high 96
Cratægus coccinea 189
punctata 101
Crepsis 62
Currant, Red 77

Dahlia 88
Diospyros virginiana 96
Dock 88
Dogsbane 94
Dogwood 101
Red-osier 142
Dyer's broom 88

Elder 100
Elm 112, 119, 140
White 136, 142
Red 153
Endive 168
Eragrostris pœoides, var megastachya 139, 145
Erigeron canadense 58, 100, 168
Euphorbia maculata 57
marginata 57
Euonymus 88

Flea-bane 58
Fox-tail grass 56
Fraxinus americanus 210
excelsioris 147
quadrangulata 147
sambucifolia 210
Fungus 141

Galium aparine 88
circæzans 89
Garden oracho 88
Genista 88
Gerardia tenuifoliæ 66
German ivy 80
Golden rod 49
Gooseberry 77
Grape 55, 158
Gray willow 116

Helianthus 191
Heuchera hispida 66
Hickory 162, 171, 199
Bitternut 164
Pignut 116, 163
Shagbark 162
Honey-suckle 104
Hop-vine 70
Hornbeam 17
Hypericum prolificum 109
kalmianum 190

Impatiens fulva 98
Indian corn 89, 122
Iron oak 163
Ironweed 97, 99
Ivy, German 80

Knot-weed 62
Lactuca oleracea 62
sativa 61
scariola 62
virosa 61
Larch, American 117, 156
Lathyrus odoratus 65
Leguminosæ 101
Lettuce 60, 61, 62, 166
Linden 120, 188

PAGE.
Lirodendron tulipifera 189
Lonicera 104
Maize 89, 122
Maple, Soft 47
Sugar 18
Meadowsweet 65
Melilotus italica 192
Mentha viridis 69
Milkweed 58
Mint, Garden 69

Nectarine 76
Negundo aceroides 103
Nerium oleander 95

Oak, ... 79, 107, 139, 200
Bur 108
Iron 163
Red 113
Swamp-white 163
White 118, 163
Oats 51
Oleander 95
Orache, Garden 88

Panicum crus-corvi 56
glabrum 138, 170
Papaver 88
Parsnip 84
Pastinacea sativa 84
Pea, ... 65
Sweet 65
Peach 76, 102
Pear 16
Pecan 199
Persimmon 96
Pigweed 88
Pine 14, 102, 156
White 117, 137, 140
Pink, Carnation 80
Plum 76, 82, 87
Poa annua 167
Polygonum persicaria 62
Poplar, ... 102
Balsam 153, 154
Balm of Gilead 105
Cottonwood 104, 149, 151
Poppy 88
Populus angulata 104, 151
balsamifera 206, 208, 209
grandidentata 102
monilifera 149, 206, 208
tremuloides 148, 149
Prunus virginiana 93

Quercus alba 163
bicolor 163, 198
imbricaria 196
macrocarpa 108
obtusiloba 163
prinus 199
rubra 113, 197

Ragweed 49
Raspberry 64, 148
Red current 77
Red elm 153
Red oak 113
Ribes grossularia 62, 77
nigrum 62
rubrum 77
Robinia viscosa 192
Rose 50
Rubus fruticosus 64
idaeus 64
occidentalis 148
Rudbeckiæ laciniata 49
Rumex acetosa 88
Rye 51

Salix alba 201
babylonica 194, 200
lucida 192, 200
nigra 192

PAGE
Sárothamnus scoparius 64, 69
Scrophularia nodosa 72
Setaria glauca 56, 139
italica 139
viridis 139
Shepherd's purse 55, 88
Silphium integrifolia 191
perfoliatum 191
Snow-ball 96
Snow-berry 99
Soft maple 47
Solidago rigida 190
serotina 190
Sonchus oleracea 167 190
Sorghum 88
Spanish needle 59
Spirea almaria 65
Spotted spurge 56
Spruce, Black 117, 156
Squash 67
Stinging nettle 55
St. John's-wort 108
Strawberry 65
Sugar maple 18
Sumac 152
Sweet flag 14, 15
Sweet pea 65
Symphoricarpus vulgaris 90

Tamarack 117, 157
Tanacetum vulgare 68
Tansy 68
Thistle 100
Thorn 101
Tomato 73
Touch-me-not 98
Tufted vetch 87
Tulip 81 188
Tulipa gesneriana 81

Ulmus americana 112, 196
Urtica dioica 65

Verbena 63
Vernonia fasciculata 97
lindheimeriana 190
noveboracensis 190
Vetch, Tufted 88
Viburnum opulus, var. americana 97
Vicia cracca 88

Walnut 113, 141, 199
Wheat 51
White elm 136
oak 118
pine 117, 137, 140
Willow, 63, 105 115, 119
Gray 116
Witch-hazel 207
Wormwood

GENERAL INDEX.

A.

PAGE

abieticolens 156
abietis . . 117, 118, 157
absinthii 69
acaroides 211
acerifoliæ 42, 195
acerifolii 92, 209
acerina 78
aceris 49, 78
achyrantes 187
acetosæ 88
Alder Blight 139
Alder-leaf Lachnus . . . 118
Almond Aphis . . . 102
alnifoliæ 118
ambrosiæ . . . 50, 211
Adelges of the Spruce . . 156
americana 15, 202, 211
amygdali 102
Anastis 15 punctata 174
Anatomy, External . . . 20
annulata 18
annulipes 211
aparines 88
Aphides 19
Aphidæ 150
aphidicola 19
Aphididæ 19
Aphidina 19
Aphidinæ 44
Aphidini (Section) 83
Aphidius avenaphis 176
lactucaphis . . . 175
polygonaphis . . . 175
viburnaphis . . . 175
Aphis 84
absinthii 69
acaroides 211
acerina 78
aceris 88
acetosæ 88
ambrosæ 211
amygdali 102
annulipes 211
aparines 88
apocyni 94
armata 88
asclepiadis 191
atriplicis 88, 193
avenæ 51
beccabungæ 97
bella 106, 107
berberidis 87
betulæ 110
betulaecolens 110, 198
bicolor 211
brassicæ 91
capreæ 84
carduella 100
caryæ 116
caryella 170
cephalanthi 97, 192
cerasi 93
cerasifoliæ 93
cerealis 51
chenopodii 88
circæzandis 89
corni 101
cornifoliæ 101, 193
coryli 106
Aphis
craccæ 88
crataegi 101
crataegifoliæ 101, 19
dahliæ 88
dauci 181
diospyri 95
diplopha 211
discolor 211
euonymi 88
fabæ 88
fagi 120
fraxini 147
fumipennella 171
furcipes 211
galliscabri 88
genistæ 88
gibbosa 211
granaria 51
helianthi 191
hordei 51
hortensis 81
hyperici 193
humuli 87
impatientis 98
laburni 88
lactucæ 61
lanigera 126
lathyri 64
lutescens 191
maculatella 171
mahaleb 70, 73
maidis 89
mali 85, 121
malifoliæ 86
marginella 171
marginipennis 211
medicaginis 101, 192
middletonii 99
nerii 95
onobrychis 64
oreaster 211
papaveris 88
pastinaceæ 84
pilosa 211
pinicolens 102
pisi 64
populi 105
populifoliæ 102, 151
pruni 72, 82, 87
prunifoliæ 87
punctatella 171
pyri 101
quercifoliæ 79
quercus 108
rhodryas 211
ribicola 76
ribis 76
ribis-nigri 61
rubecula 211
rumicis 88, 193
salicicola 192
salicti 115
sambuci 100
sambucifoliæ 100
setariæ 192
solidaginis 49
sonchi 69
symphoricarpi 90
thlaspeas 84

PAGE

Aphis
tulipæ 87, 188
ulmariæ 64
ulmi 119 196
vernoniæ 97
verticolor 211
viburni 96
vicæ 88
vitis 55
apocyni 94
Apple-leaf Aphis 86
Apple-tree Aphis 85
aquilegiæ 83
armata 88
Artificial means of destruction 179
asclepiadifolii 58
asclepiadis 197, 198
atriplicis 88, 191
avenae 51
avenaphis 176

B.

Balm of Gilead Plant-louse 103
Bean Aphis 88
Beautiful Oak Aphis 106
beccabungæ 97
bella 106, 107, 196, 197
Beech Aphis 120
Beech Blight 130
Beech-tree Blight 139
berberidis 81, 87
betulae 14, 110
betulaecolens 110, 196, 199
betulella 110, 111, 199
bicolor 211
Birch Gall-louse 110
bivulnerus 174
Blackberry Flea-louse 17
Blackberry-leaf Aphis 121
Black-legged Diraphia 14
Bottle-grass Aphis 56
Box-Elder Plant-louse 103
brassicae 91
bulbipes 108
bumeliae 148
Button-bush Aphis 97
Byrsocripta pseudobversa 151
ulmicola 142, 204
vagabunda 151
vitifoliae 158

C.

Cabbage Plant-louse 91
calamorum 14
Calamus Diraphia 14
Calaphis betulella 110 111, 199
calendulella 186
calendulae 188
Callipterus 109 195
bella 196
betulae 110
betulaecolens 196, 198
caryae 196, 199
caryellus 170
castaneae 114
discolor 196 197
fumipennella 171
hyalinus 196, 198
juglandis 113
maculellus 171
marginellus 171
mucidus 172
punctata 196, 198
punctatellus 171
quercicola 196, 199
quercifolii 112
querous 113, 174
ulmicola 111
ulmifolii 184, 195
walshii 195, 196

PAGE

Canada Flea-bane Aphis 75
candicans 105
capreae 84
carduella 100
carpenterii 54
carpini 18
caryae 116
caryae-caulis 160
-fallax 164
-foliae 161
-globuli 164
-globosa 163
-gummosa 154
-ren 154
-septa 164
-venae 162
-semen 163
caryella 170
caryellus 70
castaneae 114, 164
cephalanthi 97 192
Ceraphron carpenterii 54
cerasaphis 176
cerasi 75, 93
cerasifoliae 93
cerealis 57
cervicalis 132
Chaitophorus 103, 200
candicans 105
lonicera 104
negundinis 103
ononedis 106
populicola 102, 103
quercicola 201
salicicola 105
smithiae 200
viminalis 105, 200
Characteristics of the family (Aphididæ) 26
chenopodii 87
Chermes 105
abieticolens 156
abietis 157
laricifoliae 157
laricis 155
pinifoliae 156
Chermesinae 154
Synopsis of 41
Chestnut Gall-louse 114
Chilocorus bivulnerus 174
Chlorophana 178
Chrysopa oculata 177
eriosoma 136
illepida 178
chlorophana 178
ploribunda 178
pseudographa 178
circaeorandis 89
Cladobius 198
Classification of Aphididae, 33
by Kaltenbach 33
" Koch 34
" Passerini 35
" Serville and Amyot 33
" Walsh 37
" Westwood 44
Coccinella munda 174
nine-notata 174
Coccinellidae 172
Coccus mali 126
Colopha 142
eragrostidis 154
ulmicola 142, 144, 204
compressa 138
convergens 173
coreopsidis 59
Corn Aphis 89
Sipha 122
corni 101
cornica 164
cornicola 141
cornifoliae 101, 193
Coryli 106
Counterfeit Golden-eye . 178

PAGE.

C—Continued.

cracœ ... 88
cratægi ... 101
cratægifoliæ ... 101
cucurbitæ ... 67
cyparissæ ... 57

D.

Dactylosphera globosum ... 163
vitifoliæ ... 158
dahliæ ... 88
dauci ... 181
dentatus ... 115, 116
depressa ... 164
dianthi ... 80
diospyri ... 95
diplepha ... 211
Diraphia ... 13
calamorum ... 14
femoralis ... 14
maculipennis ... 14
vernalis ... 14
dirhoda ... 67
Disagreeable Golden Eye ... 178
discolor ... 196, 198, 211
Dogsbane Plant-louse ... 94
Dogwood Aphis ... 101
Drepanosiphum ... 78
acerifolii ... 195
acerini ... 78
aceris ... 78
quercifolii ... 70
tiliæ ... 188

E.

Elder Aphis ... 100
Elm Gall-louse ... 111
-leaf Aphis ... 140
-leaf Cockscomb Gall ... 144
Ephedrus plagiator ... 54
eragrostidis ... 144
erigeronensis ... 58, 100, 168
Eriophilus mali ... 131
Eriosoma lanigera ... 126
mali ... 126
pyri ... 128
ulmi ... 136
euonymi ... 88
euphorbiæ ... 56
euphorbicola ... 57
External Anatomy ... 20
Eye marked Golden Eye ... 177

F.

fabæ ... 88
fagi ... 120
femoralis ... 14
ficus ... 16
fifteen punctata ... 174
forcata ... 164
Formica aphidicola ... 156
formicarius ... 150
formicetorum ... 150
fragariæ ... 68, 189
fraxini ... 147, 211
fraxinifolii ... 146, 207
fumipennela ... 171
fungicola ... 141
furcipes ... 211

G.

Gall Plant-lice (Pemphiginæ) ... 122
galliscabri ... 88
Garden mint Aphis ... 68
gei ... 65
Genera, List of ... 42
genistæ ... 88

PAGE.

gerardiæ ... 65
gibbosa ... 211
glacialis ... 174
globosum ... 163
Glyphina eragrostidis ... 144
ulmicola ... 89, 142, 204
Grain Aphis ... 57
granaria ... 51
Grape inhabiting Aphis ... 55
Phylloxera ... 158
Gray willow Aphis ... 116
Green Dolphin or Pea Plant louse ... 64

H.

Habits and Life History ... 27
Hamamelistes spinosus ... 206
helianthi ... 191
Hemiptera ... 9
Key to ... 11
Heteroptera ... 9
heucheræ ... 66
Hickory Gall Aphis ... 160
Leaf witherer ... 161
Plant louse ... 116
Hippodamia convergens ... 173
glacialis ... 174
maculata ... 173
13-punctata ... 174
Homoptera ... 9
subdivisions of ... 10
Honeysuckle Plant louse ... 104
Hop Aphis ... 70
hordei ... 51
Hormaphis
spinosus ... 206
Hornbeam Psylla ... 18
hortensis ... 88
humuli ... 70, 87
hyalinus ... 196, 198
Hyalopterus ... 82
acquilegiæ ... 83
pruni ... 82
hyperici ... 108, 193

I.

Ichneumon flies ... 175
illepida ... 177, 178
imbricator ... 139
impatientis ... 98
Insect enemies and parasites ... 172
Introduction ... 5
Ironweed Aphis ... 97

J.

jaccæ ... 188
juglandis ... 113
Jumping Plant lice ... 12, 15

K.

Kaltenbach, Classification of ... 33
Key to Hemiptera ... 11
Knotweed Aphis ... 62
Koch, Classification of ... 34

L.

laburni ... 88
Lachninæ ... 114
Lachnini ... 114
Lachnus ... 115
abietis ... 117, 118
alnifoliæ ... 118
caryæ ... 116
dentatus ... 115, 116
laricifex ... 117
longistigma ... 119
pini ... 117
populi ... 119

PAGE

L—Continued

quercifoliæ 108, 118
salicelis 119
salicicola 105 115
strobi 117
ulmi 119
lactucæ 61
lactucaphis 175
Lady-bird 172
lanigera 126
Larch chermes 156
laricifex 117
laricifolii 156
laricis 155
lathyri 64
Letter of Transmittal 1
Lettuce Aphis 61
Earth louse 165
Life history and habits 27
Linden 119
liriodendri 189
List of Genera 42
livia 13
lavilla 212
longistigma 119
lonicera 104
lutescens 191

M.

maculata 173
maculella 171
maculellus 171
maculipennis 14
mahaleb 70 72
maidis 89
Maize Aphis 122
Siphа 89
mali 85
malifoliæ 86
malvæ 61
Margined Spurge Aphis 57
marginella 171
marginellus 171
marginipennis 211
maydis 122
medicaginis 101 192
Megoura 73
solani 73
menthæ 68
middletonii 99
Milkweed Aphis 58
Mouldy Aphis 172
mucidus 172
munda 174
Myzocallis 105
bella 106
hyperici 108
mali 126
quercicola 106
Myzoxylides 123
Myzus cerasi 75
cerasifoliæ 93
persicæ 76 102
ribis 50, 76

N.

negundinis 103
Nematus salicis-pomum 206
nerii 95
nine-notata 174
Nomenclature 19

O.

Oak-Blight 139
-leaf Gall louse 112
" Lachnus 118
" Phylloxera 163
oculata 177
Oleander Plant-louse 112

PAGE

onobrychis 64
ononedis 106
oreaster 211

P.

panici 158, 169
panicola 5, 198
papaveris 88
Parsnip Plant-louse 84
Pastinacæ 84
Pea Plant louse 64
Peach tree Aphis 76
Pear tree Jumping Plant louse 16
Pemphigina 41, 122, 145
Pemphigini 124 125, 145
Pemphigus 146
acerifolii 209
carycaulis 160
caryæ venæ 162
formicarius 150
formicetorum 150
fraxini 211
fraxinifolii 146, 210
populaira 153
populicaulis 149
populi globuli 153
monilis 205
ramulorum 209
transversus 208
-venæ 154
pseudobyrsa 151
pyri 126, 128 150
rhois 152
tubi 147
ulmicola 142, 144
ulmi fusus 153
vagabundus 146 151
vitifolii 158
Perityrbia vitisana 158
persicæ 76
Persimmon Plant louse 96
Phorodon 69
humuli 70
mahaleb 72
scrophularia 72
Phyllaphis 120
fagi 120
Phylloxera 157
carycaulis 160
falax 164
foliæ 161
-globosa 163
globuli 164
gummosa 164
-ren 164
-semen 163
-septa 164
venæ 162
castaneæ 164
cornicæ 164
depressa 164
forcata 164
rileyi 163
spinosa 164
vastatrix 158
vitifoliæ 158
pilosa 211
Pine-tree Blight 140
pini 117
pinicola 5
pinicolens 102, 151
pinifoliæ 176
Pipiza radicum 131
pisi 64
plagiator 54
Plant-lice True 19
floribunda 178
Plum tree Aphis 87
poæ 166
polygonaphis 175
polygoni 62

P—Coutinued.

PAGE.
Poplar Bullet Gall-louse 152
Gall-louse 153
-leaf Aphis.... 102
-leaf Gall louse.... 149
-vein Gall-louse 153
populaphis 176
popularia 153
populi... 105, 119
-caulis 149
-globuli 153
-monilis 205
-ramulorum 205
-transversus 154
-venæ 154
populicola 102, 103, 129
populifoliæ 102
Prociphilus bumeliæ 147
pruni 72, 82, 87
prunifoliæ 87, 156
pseudobyrsa 151
pseudographa 178
Psylla 15
annulata 18
carpini 18
ficus 16
pyri 16
quadrilineata 18
quadrisignata 18
rubi 17
tripunctata 10
urticæcolens 18
Psyllidæ 11, 12, 211
Brief synopsis of the genera of 212
punctata 193, 195
punctatella 171
punctatellus.... 171
pyri 16, 101, 136, 128

Q.

quadrilineata 18
quadrisignata 18
querci 1, 139
quercicola 106, 196, 199, 201
quercifoliæ 79, 108, 118
quercifolii 79, 112
quercus 108, 113, 194

R.

radicum 132
Red Elm Gall louse 153
Remarks 181
Rhizobinæ 165
Rhizobius 165
lactucæ 165
poæ 166
sonchi 167
rhodryas 211
rhois 125
Rhopalosiphum.... 79
berberidis 81
dianthi.... 80
lactucæ 62
lonicera 104
pastinaciæ 61
rhois.... 194
ribis.... 76
salicis.... 194
tulipæ 80, 188
ribicola.... 76
ribis 50, 76
ribis-nigra 61
rileyi 163
rosæ.... 50
rosarum.... 51
rubecula 211
rubi 17, 107
rubifoliæ.... 121
rubifolii 121
rudbeckiæ.... 49
rumicis 88, 193
Ryzaphis vastatrix.... 158

S.

salicaphis 175
salicelis 119
salicicola 105, 115, 119, 192
salicis.... 194
salicis-pomum 206
salicti 115
sambuci 100
sambucifoliae 100
Schizoneura 125
americana 202, 211
caryae 141
compressa 139
cornicola 141
fagi 140
fungicola 141, 197
imbricator 136
lanigera 124, 126
panicola 138
pinicola 137
rileyi 136
strobi 140
tesseliata 139
ulmi 119, 124, 140
venusta 137
Schizoneurinae 125
Schizoneurini 124, 125
scrophulariæ 72
Scymnus cervicalis 14
setariae 56, 120
Sipha 120
maydis 122
rubifolii 121
Siphocoryne 3
capreae 84
pastinacæ 84
Siphonophora 46
absinthii.... 66
acerifoliae 57, 195
achyrantes 187
ambrosiae 50
asclepiadifolii.... 58
asclepiadis 50
avenae 51
calendulae 190
calendulicia 188
coreopsidis 59
crataegi 187
cucurbitae 67
cyparissiae 57
dirhoda 67
erigeronensis 58
euphorbiæ 56
euphobicola.... 57
fragariae 68, 191
gerardiae 65
gei 65
granaria.... 6, 54
heucherae 66
jacobae 118
lactucae 69
lirodendri 189
malvae 61
menthae 68
pisi 64
polygoni.... 62
ribicola 76
rosae 50
rosarum 51
rubi 64
rudbeckiae.... 49, 190
salicicola.... 68, 192
setariae 56, 192
sonchella.... 189
sonchi 189
tanaceti.... 68
tiliae.... 189
tulipae 188
ulmariae.... 64

S Continued

PAGE

verbenae 63
viticola 55
Siphonphorini (Section) 46
smithiae 200
Snow-ball Aphis 96
Snow-berry Aphis 99
solani 73
solidaginis 49
sonchi 60
spinosa 164
spinosus 206
Spotted Willow Aphis 116
Spruce-tree Lachnus 117
strobi 117
St Johnswort Plant-louse 108
Sumac Gall-louse . 152
Supplement 185
Synopsis of the Families of Plant lice 10
of the Subdivisions and Genera
of Aphidinae 39
of Chermesinae 41
of Pemphiginae 41
of Rhizobinae 41
Synoptical table of the Sub-families (Aphididae) 39
Syrphus 179
fly Root-louse 131

T.

Tamarack Aphis 117
tanaceti 69
tessellata 139
Tetraneura ulmi 146
Thelaxes 142
ulmicola 142, 144, 204
thlaspeas 58
Thorn-leaf Aphis 101
tiliae 188
Touch-me-not Aphis 98
Toxares triticaphis 176
Trioxys cerasaphis 176
populaphis 176
salicaphis 176
tripunctata 18
triticaphis 176
Trombidium bulbipes 108
tulipae 80
Tychea 138
ergeronensis 100
panici . 138

U.

PAGE

ulmariae . 64
ulmi 119, 136, 140, 146
ulmicola 89, 111. 142, 144 204
ulmifolii 195, 890
ulmi-fusus 153
urticaecolens 18

V.

Vacuna 142, 145
Vacunini 124
Vagabond Gall-louse 151
vagabunda 15
vagabundus 146 151
vastatrix 158
venusta 139
verbenae 63
vernalis 14
vernoniae 97
verticolor 211
viburnaphis 175
viburni 96
vicae
viminalis 105, 200
viticola 105
vitifoliae 158
vitis 55
vitisana 158

W.

walshii 196 197
Weeping Golden-eye 179
White Pine Lachnus 117
Willow Plant-louse 115
Wooly Aphis of the Apple-tree 126
natural enimies of 131
Remedies for 132
Wooly Aphis of the Elm-tree 136
of the Oak 139
Wooly Plant-lice (Schizoneura) 125

X.

Xanthelis 211

Y.

Yellow-headed Golded-eye 178

ERRATA.

Page 9, for HEMOPTERA read HEMIPTERA
Page 11, for HEMOPTERA read HEMIPTERA